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A DEFICIENCY IN PRESENT-DAY EDUCATION

CHAIRMAN'S ADDRESS *

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This is the age of science. Every one is cognizant of the fact that the application of the discoveries in physics and chemistry has made life more convenient and complete. Every one who reads understandingly is aware of the achievements of medical science. No one acquainted with the history of progress would deny that scientific investigation or the purposeful use of the experimental method has played an outstanding rôle in the elevation of man from barbarism to civilization, and has been the sole agency in visualizing for man the awe inspiring facts concerning the world in which he lives and the universe of which it is a part.

Yet, one may seriously inquire, Is this the age of science? Is modern progress simply the result of the achievements of the few applied for the welfare of the many? Has society achieved greater sanity? Does society think scientifically? Is the scientific method being used purposefully by society? Are scientific truths universally accepted? Does society stand with open arms to receive the discoveries of science, or does science have to persuade, "sell" or even propagandize society to receive its discoveries and truths?

Those acquainted with history know that science has encountered determined opposition at every step. It was not long ago that scientists were burned at the stake, the discoveries of physicists ridiculed and called devices of the devil, and chemists persecuted because they practiced the black art. Of course, those days have passed and, generally speaking, the value of the result of scientific research is acknowledged. However, the same spirit of ignorance, misunderstanding, envy and fear of science and truth is prevalent today. "The vast majority of the population has not yet emerged into the scientific age." "The very name of science is being perverted to serve superstition, fakery and fraud," and successfully. The dawn of scientific understanding in society is still awaited. Not only is unscientific thinking a fairly universal human proclivity, but there exists among the most enlightened peoples an emotional hostility to biologic and medical science.

The relation of biologic and medical science to some groups in society at the present time is quite analogous to the relation of physics and chemistry to some groups in society in former times. Why? Because life is the most complex and mysterious phenomenon in the universe, and we are more intimately concerned with it and its attributes than with any other phenomena. At the present time, probably less is known about it than about physical and chemical phenomena, and the general public unfortunately knows less about life processes than it knows about other natural phenomena. What the physician does and why and how he does it, when he enters a home to care for a patient, is much more mysterious to the average human being than the activities of the electrician or the telephone man. To many people, the physician is still a medicine man, a miracle man. A serum means no more than a "shot in the arm." If the physician does not effect a cure, many people think that the physician either did not know his business, was indifferent, did not want to cure, or belonged to the wrong medical cult. Like religion and other mysteries, they think of medicine as divided into sects, cults and parties. They act on the principle that, if the therapy or faith of one medical sect does not work, they will try another. They look for the miracle worker, the quack and the faker, and buy "patent medicines." Because of the past association of biology and medicine with religion, too many people look on the facts and teachings of scientific medicine as a kind of faith and on the science of biology as a new religion. To them, medical science with its facts and truths does not exist. Hence there are antimedical and antievolution agitations.

The medical profession realizes that one of its chief problems is to bring about a better understanding of scientific medicine in society, to let society know that truth is the motive of medical science and that facts, not beliefs, determine truth.

The usual remedy for such problems is propaganda and education. But propaganda is ineffective unless the minds of those it is designed to influence are prepared. All will agree that education, the teaching of elementary truth, is the proper and only method of coping with this problem.

The question arises: Is present-day formal education coping effectively with this problem? Is the scientific method of collecting evidence and of arriving at a conclusion by analysis of the facts used as a tool in all matters? It is true that today the scientific method is applied to matters of immediate practical interest to the individual. The good business man investigates the facts pertaining to his business, but too frequently uses his imagination and emotions in dealing with important but extraneous matters. The public permits the stock market, high pressure salesmen, false advertising and the unscrupulous politician to despoil it of its material wealth, and the faker and quack to persuade it with figures of speech. In spite of the influence of present-day education, it is easier to sell the public the cure-all, the impossible, than the possible and scientifically proved remedy. It is easy to organize antihistory, anti-

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vivisection, antievolution and antimedical crusades. Every one who has had anything to do with these antiscience movements knows that these statements are not exaggerated. Among the supporters of the antiscience crusades are conscientious men and women, intelligent and educated in regard to their own professions. Occasionally, "leading citizens" go and have gone to chiropractors and their ilk for diagnosis and therapy. California, an intelligent, progressive and, according to statistics, the most highly educated state in the union, is practically a leader in regard to the number and power of antiscience movements. Thus, one cannot rest assured that present-day education will lead our population to think scientifically and to realize that biologic science is based on facts and not fancy.

Since it is a common belief that education is a prophylactic for the errors and follies in society and that a knowledge of the truth will set men free, there must be some deficiency in present-day education.

Among educators, among enlightened groups in society, even among the students themselves, considerable dissatisfaction with present-day education is expressed. It is said that the product of our schools does not think, cannot correlate, cannot adjust, and cannot use effectively what he knows. And, of course, an educated person is supposed not only to know but to understand, to use, to possess disciplined emotions and to manifest controlled behavior and a critical judgment.

It is being recognized more and more that education by dictation is not a success. Educators are beginning to recognize that we learn effectively only by doing. The scientific method of doing, of learning by experimentation, the method by which science grows, is being introduced into secondary and primary education in the best school systems, and the courses in the curriculum that can be taught only by dictation are losing their former hold on the educational process. This movement should be encouraged. The child and the youth should be encouraged, in spite of the additional labor on the part of the teacher and the additional expense involved, to answer questions by searching for them by experiments, so that the scientific method may become more of an automatic cerebral process.

However, the introduction of the scientific method into the educational system per se will not develop a true regard for the human body, the most wonderful creation, or a true regard for the facts of medical science, and will not meet what appears to me to be an outstanding deficiency in present-day formal education.

It is my contention and thesis that the only method for accomplishing this aim is to introduce the study of biology and human anatomy and physiology into the curriculum of primary and secondary schools on a par with the "three R's." It is true that a little nature study has been introduced into the grammar grades of some of the best public schools and that a fair course in botany, zoology, physics and chemistry is offered in numerous high schools; but it is exceedingly rare to find a high school in which a good course in anatomy and physiology by a trained teacher is offered. In all high schools there are teachers with special training in Latin, English, history and modern languages but not in human anatomy and physiology. The present attempt at health education in the public schools is a highly laudable enterprise, to be encouraged, but as a rule is a feeble effort made by teachers who know very little anatomy and physiology, as a result of their own deficient education. Even colleges and universities turn out graduates who for the most part know relatively nothing about the human body. Just the other day a well known chemist inquired how the blood passes through the heart and lungs and deplored his ignorance of the body processes. If health is our greatest wealth and asset, if the human body and mind are the most wonderful creations, certainly an educated person should possess a working knowledge of human anatomy and physiology, and training in the knowledge of the human body should be equal to that received in English, history and arithmetic, or it should at least be given a significant and effective place in the curriculum and taught by teachers who have had some special training in the subject.

Such a program would engender a wholesome respect and regard for the human body and its processes. Lessons in hygiene would be based on a background of facts and would be more keenly appreciated. People with the proper knowledge of the human body would not patronize cults and would realize that an expert knowledge of the body in health and disease cannot be acquired in a few weeks or months but only by years of specialized training. Much of the information now given to the public in regard to the advances in biology and medical science, in regard to health, quacks and nostrums, would fall on more fertile soil. The importance of periodic health examinations would be obvious. A population with a knowledge of the nature and control of the processes of the human body would stand with open arms to receive the advances made relative to the cause, control and cure of disease and would lend a more sympathetic and understanding ear to the advice and problems of medical science.

I believe that the members of the medical profession should bring their influence to bear on the school boards and on the educators in their communities to the end that an adequate and properly taught course in anatomy and physiology be introduced into the public school curriculum, so that people may have the opportunity and be stimulated to acquire a wholesome respect and regard for the human body and its processes.

I realize fully the objections and difficulties that confront the adoption and inauguration of the foregoing suggestion. The chief obstacle is that there is a small minority that religiously fights and fears the truth. But in view of the progress of the past century, I am hopeful and dauntlessly optimistic that the present-day unrest in education is a good omen and that truth will prevail.

The Scope of Bacteriology.—As in other growing sciences, so in bacteriology a noticeable differentiation has occurred. The relation of bacteria to disease early took a conspicuous place among the subjects included within the scope of the new science, and it is highly probable that the side of bacteriology bearing upon the science of pathology and the art of medicine will always remain, what it is today, its most broadly important aspect. There is at present a tendency for the workers in this field to specialize either along strictly pathologic or along hygienic lines. In pathologic bacteriology consideration is given chiefly to the effects produced upon the animal body by the presence of bacteria and their toxins, to the distribution of the germs within the body, and to the reactions, defensive and otherwise, evoked by bacterial invasion. Hygienic or sanitary bacteriology deals more particularly with the channels by which bacteria leave the human body and pass into the outer world, with the mode and duration of life of disease germs in water, soil and air, and with the avenues by which these disease germs are able again to approach and inflict healthy individuals.—Jordan, E. O.: A Text-Book of General Bacteriology, Philadelphia, W. B. Saunders Company, 1931.

THE TYPHUS-ROCKY MOUNTAIN SPOTTED FEVER GROUP IN THE UNITED STATES *

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Epidemic typhus fever has been a scourge in Europe for many centuries. First differentiated from typhoid by Gerhard [1] in Philadelphia in 1837, epidemic typhus has been introduced into our Eastern seaports from time to time in connection with immigration. Tabardillo, or Mexican typhus, has been present in the highlands of Mexico for many years. The disease may possibly have been introduced into Mexico at the time of the Spanish Conquest or, as Mooser [2] suggests, it may have been present in Mexico prior to the conquest. Tabardillo has been introduced across our Mexican border from time to time in much the same way that European epidemic typhus has been brought to our seaports. Brill's disease was described in this country by Dr. Nathan E. Brill, in 1910.[3] Subsequent researches by Anderson and Goldberger [4] identified this disease, immunologically, with Mexican typhus. In more recent years, largely through the investigations of Maxcy,[5] we have learned that a mild form of typhus fever is endemic in our Southeastern states, extending as far west as Texas. Cases have been reported in southern California, but there is apparently some question whether these cases represent our endemic typhus or were importations of tabardillo from Mexico.

In the past ten years mild typhus fever, or a typhus-like disease, has been described in the Federated Malay States, Palestine, Australia, Rome, Toulon, Roumania, Greece, and South America. Epidemic typhus has a widespread distribution in Europe and Asia.

Another disease, Rocky Mountain spotted fever, known to be present in the western part of the United States for many years, is apparently closely related to typhus. Spotted fever must be considered in discussing typhus fever in this country since the two have been confused in the Eastern states in the past. Clinically, there is a strong resemblance between the two diseases. There is similarity on the serologic side; thus, Kuczynski [6] noted that the serums of rabbits injected with spotted fever virus did not as a rule contain agglutinins for *Proteus* X_{19} strains, but in one instance he obtained agglutinins in low dilutions for a strain of *Proteus* X_2. He found that white rats, dogs and monkeys produced agglutinins for *Proteus* X_{19} after inoculation with spotted fever virus. Munter [7] found that rabbits inoculated with spotted fever virus produced agglutinins for *Proteus* X_{19} (type 0). Kerlee and Spencer [8] also reported the production of agglutinins for *Proteus* X_{19} (type not specified) by rabbits. Spencer and Maxcy [9] reported that a large proportion of human cases of spotted fever give a positive Weil-Felix reaction. On the other hand, as first shown by Ricketts,[10] typhus and spotted fever are distinct immunologically.

It may be noted that a disease similar to, or, perhaps, identical with, Rocky Mountain spotted fever is present in India, Africa, and the Mediterranean littoral.

Epidemiologically, epidemic typhus, endemic typhus of the United States, and Rocky Mountain spotted fever are different. Epidemic typhus has its greatest prevalence in winter; it is associated with crowding; it is most prevalent in the lower strata of society; multiple cases in households, jails and hospitals are common. Endemic typhus has its greatest prevalence in summer and fall; it is not associated with crowding; there is no predilection for the lower strata of society; there is no evidence of spread from man to man. Rocky Mountain spotted fever occurs in the spring months, is sporadic, and follows tick bite.

TRANSMITTING AGENTS

Yersin [11] reported in 1908 that he had taken blood from a patient suffering with epidemic typhus and injected this blood into a volunteer. The volunteer developed typhus, and Yersin concluded that the disease in nature "was transmitted to man by the bites of insects." The following year Nicolle [12] confirmed this observation by transmitting the disease through the agency of the body louse. Goldberger [13] found that the head louse was also infectible with Mexican typhus. The rôle played by the body louse in the transmission of epidemic typhus has been repeatedly confirmed epidemiologically and experimentally.

In contrast to the epidemiologic evidence supporting louse transmission of epidemic typhus, Maxcy [5] has concluded from his study of typhus in the southeastern United States that the "epidemiological characteristics afford no evidence suggesting louse transmission." Maxcy noted further that those of the population engaged in "trade," and especially those employed in food handling establishments, are exposed to an increased risk of infection. He advanced the hypothesis that a rodent reservoir of endemic typhus exists and that the disease is transmitted from rodents to man by the bite of some blood-sucking insect or arachnid. He suggested fleas, mites or, possibly, ticks—although ticks certainly were not incriminated by his evidence. It seems possible that, in suggesting ticks, Maxcy had in mind certain cases included in his study of endemic typhus, which we now think were the eastern type of Rocky Mountain spotted fever. Seventy-eight per cent of the endemic typhus cases studied by us in 1930 were associated with rat infestation.[14]

Wilson and Chowning,[15] in 1902, suggested that the wood tick was the transmitting agent of Rocky Mountain spotted fever and that an animal reservoir existed

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

1. Gerhard, W. W.: Am. J. M. Sc. **38:** 25, 1837.
2. Mooser, H.: J. Infect. Dis. **44:** 186 (March) 1929.
3. Brill, N. E.: Am. J. M. Sc. **139:** 484, 1910.
4. Anderson, J. F., and Goldberger, Joseph: Pub. Health Rep. **27,** number 5, 1912.
5. Maxcy, K. F.: Pub. Health Rep. **41:** 2967 (Dec. 24) 1926.
6. Kuczynski, M. H.: Biologische und pathogenetische Studien, Berlin, Julius Springer, 1927.
7. Munter, H.: Ztschr. f. Hyg. u. Infektionskr. **109:** 124, 1928.
8. Kerlee, A. L., and Spencer, R. R.: Pub. Health Rep. **44:** 179 (Jan. 25) 1929.
9. Spencer, R. R., and Maxcy, K. F.: Pub. Health Rep. **45:** 440 (Feb. 28) 1930.
10. Ricketts, H. T., and Wilder, R. M.: The Relation of Typhus Fever (Tabardillo) to Rocky Mountain Spotted Fever, Arch. Int. Med. **5:** 361 (April) 1910.
11. Yersin, A., and Vassal, J. J.: Philippine J. Sc. **3:** 131, 1908.
12. Nicolle, C.; Comte, C., and Conseil, E.: Compt. rend. Acad. d. sc. **149:** 486, 1909.
13. Goldberger, Joseph; and Anderson, J. F.: Pub. Health Rep. **27,** number 9, 1912.
14. Rumreich, A. S.; Dyer, R. E., and Badger, L. F.: Pub. Health Rep. **46:** 470 (Feb. 27) 1931.
15. Wilson, L. B., and Chowning, W. M.: First Biennial Report of Montana State Board of Health, 1902, p. 27.

in nature. Ricketts,[16] in 1906, began studies which demonstrated the presence of infected ticks in nature and the hereditary passage of the virus from one generation of ticks to the next. King,[17] independently, transmitted the disease to guinea-pigs by the bite of ticks. In 1908, McCalla[18] published the results of an experiment performed in 1905 in Boise, Idaho. He removed a tick from a spotted fever patient and produced the disease in two volunteers by permitting the tick to feed on them. Ricketts,[19] in 1909, reported successful transmission of spotted fever by the wood tick *Dermacentor andersoni*, and, in 1911, Maver[20] reported the experimental transmission of the disease by the American dog tick *Dermacentor variabilis* and by *Dermacentor marginatus* and *Amblyomma americanum*.

TWO DISEASES FOUND IN THE EASTERN STATES

In connection with our studies on endemic typhus in the Eastern states it was noted by Rumreich[14] that many of the cases observed in the spring and summer of 1930 differed, clinically, from the disease as described by Brill, Maxcy and others and closely resembled Rocky Mountain spotted fever. It developed that there were corresponding epidemiologic differences between the two diseases. The cases of true endemic typhus were predominantly of urban origin and occurred in association with rat infestation, occasionally following actual contact with Norway rats. The cases that were clinically practically indistinguishable from Rocky Mountain spotted fever occurred in persons living in rural sections or having rural contact, on premises as a rule rodent-free, and in a significantly high percentage of cases followed shortly on tick bite. Occasionally, when a history of actual tick bite was not elicited, the patient had crushed engorged ticks removed from domestic animals. The clinical aspects of the two diseases were, briefly, as follows:

Incubation.—In the few cases of typhus in which the probable incubation period could be estimated, it varied from seven to fourteen days. In spotted fever, the incubation was ascertained to be usually shorter, being, in most of the cases, less than one week, most frequently three days.

Onset.—The onset was abrupt in both groups, in some cases being preceded by malaise for a few days. Both diseases were usually ushered in by a chill or chilliness, headache, fever, anorexia and prostration. Generalized aching was more prominent in the spotted fever cases.

Fever.—The fever reached from 102 to 107 F. in from three to ten days and was characterized by morning remissions of from 1 to 3 degrees F. In some of the more severe spotted fever cases the remissions were absent. In the typhus group, the fever disappeared in all by the sixteenth day, ceasing on the fourteenth day in over half the cases. Most of the spotted fever cases maintained fever longer than sixteen days, the maximum duration being twenty-two days. Defervescence was, generally, by rapid lysis.

Rash.—In typhus, the rash appeared usually on the fifth day—first on the chest and abdomen, particularly over the lower ribs anteriorly and laterally and over the upper part of the abdomen, and frequently, in addition, on the medial surfaces of the upper arms. In many cases there was no further extension; in a goodly number the back was next involved; and in the more severe cases the eruption became prettly well generalized. The face was always free in our series and in only one case were the palms and soles involved. The rash was macular, rose to dull red in color, fading but usually not completely disappearing on pressure. In some cases many of the lesions were papular. The rash was in evidence for from two to nine days, then rapidly disappeared. In two patients no rash was observed at any stage; one of these was a Negro.

In spotted fever the rash appeared between the third and seventh days. The site of first appearance was nearly always the wrists and ankles. The rash was usually next noted on the back, then rapidly became generalized. The palms and soles were frequently involved, the face occasionally, the scalp rarely. The lesions were at first faint roseolous macules, from 2 to 6 mm. in diameter, often fading in the morning and reappearing with the afternoon rise of fever. By the middle of the second week they were definitely petechial in all but the mildest cases. At this stage and subsequently the rash was purpuric, and as a rule most abundant on the wrists and ankles, the legs, the upper part of the back, the shoulders, the lateral surfaces of the arms, the chest, the abdomen, the palms and soles, and the face, in the order mentioned. Petechiae, when numerous, often became confluent; this was most often seen on the ankles. Evidence of the rash sometimes persisted for several weeks in the form of dusky purplish or yellowish brown spots, which were well brought out by a hot bath or by application of a tourniquet. In several of these cases there was seen a branny desquamation of the legs, commencing late in the disease or early in convalescence.

Physical Observations.—At the height of the illness in both groups of cases the face was flushed, sometimes dusky, the tongue dry and coated, with red edges. The pharyngeal mucosa was inflamed; the conjunctivae were injected. Occasionally there were hemorrhagic lesions of the palate and buccal mucosa in the spotted fever cases. The spleen was enlarged and usually tender in 36 per cent of the spotted fever cases; it was palpable in two and tender in one of the typhus group. Rigidity of the neck, with presence of Kernig's sign, was noted in many of the spotted fever cases but in only one case of typhus. Bronchitis was present in a few cases in each group. A small ulcer at the site of the tick bite, with enlargement of regional lymph nodes, was occasionally noted in spotted fever.

General Symptoms.—The commonest symptoms at the height of the disease were, in order of frequency, prostration; headache, usually frontal; constipation, nausea and vomiting (more frequent in spotted fever); low backache and leg pains; unproductive cough. In spotted fever, pain in the back of the neck and abdominal pain were not uncommon; in typhus fever these symptoms were rare. Photophobia and sore throat were more frequent in typhus. Sweats were not uncommon in both conditions.

Nervous and Mental.—Disturbances of the central nervous system were much more severe in spotted fever. In both types of disease, lethargy, often associated or alternating with insomnia, restlessness or irritability, was present in nearly all cases. Actual stupor was more frequent in spotted fever, and coma was present exclusively in this group. Meningismus was frequent in spotted fever, and sometimes there was violent delirium.

16. Ricketts, H. T.: Contributions to Medical Science, Chicago, University of Chicago Press, 1911.
17. King, W. W.: Pub. Health Rep. **21**: 863, 1906.
18. McCalla, L. P.: M. Sentinal **16**: 87, 1908.
19. Ricketts, H. T.: M. Rec. **76**: 842, 1909.
20. Maver, M. B.: J. Infect. Dis. **8**: 327, 1911.

Laboratory Observations.—In endemic typhus, the total leukocyte count was generally within normal limits or there was a moderate leukopenia, while a definite leukocytosis was present in the spotted fever cases examined. A trace of albumin in the urine was common in both diseases. Agglutination of *Proteus* X_{19} in a dilution of 1:80 or higher was obtained with serum from practically all the cases.

Complications and Sequelae.—Complications were absent in the endemic typhus series and convalescence was, as a rule, speedy. In spotted fever, convalescence was usually more protracted. Marked deafness and visual disturbances occurred in a small number of cases. Mental confusion sometimes persisted for weeks.

Fatality.—There were no deaths in the endemic typhus group, while, of ninety-three patients with spotted fever, twenty-one died.

LABORATORY DIFFERENTIATION

Strains of the virus were established in guinea-pigs from the blood of human cases of spotted fever occurring in the rural sections of northern Virginia. The reactions of guinea-pigs to infection with these strains resembled the reactions caused by Rocky Mountain spotted fever and not the reactions occasioned by infection either with endemic typhus or with European epidemic typhus.

Two strains of virus were subjected to intensive study with the result that they were found to be immunologically indistinguishable from a strain of spotted fever isolated from ticks in the Bitter Root Valley of Montana.[21] Certain clinical differences in animals were noted. In general, there is a lower death rate among laboratory animals infected with the eastern type virus than among those infected with the Bitter Root virus. The characteristic scrotal involvement produced by the Bitter Root virus was lacking in the first thirty-five "generations" of guinea-pigs inoculated with the eastern virus. The lessened virulence of the eastern type of virus for laboratory animals corresponds to the lower fatality rate among human cases (22.6 per cent in 1930) when compared with the disease as it occurs in the Bitter Root Valley (76.81 per cent for the twelve year period 1917-1928).[22]

In guinea-pigs the incubation period varies, being in the majority of instances from two to six days. The febrile period lasts from five to ten days, with the temperature varying from 40 to 41 C. (104 to 105.8 F.). On postmortem examination of guinea-pigs killed during the course of the disease the most characteristic finding has been a large, dark red, smooth spleen. Histologic examination of the brain has shown, in approximately 50 per cent of those examined, typhus-like lesions consisting of small focal cellular glioses and occasional adventitial lymphocyte infiltration and fibroblast proliferation about capillaries and more or less pial lymphocyte infiltration.

In monkeys (*Macacus rhesus*), the incubation period has varied from five to eight days, and the duration of fever from five to twelve days. A rash frequently develops in these animals during the course of the fever. This rash may be limited to the face or include also the ears, buccal mucosa, upper arms, thighs, legs, perineum and genitalia. Histologic sections of the involved areas of the skin have shown capillary endothelial necrosis and thrombosis, pericapillary hemorrhages, and numbers of fragmented leukocytes in and about the thrombosed capillaries. Microscopic examination of brain sections from two monkeys that died during or after the febrile period showed a few patches of pial infiltration by lymphocytes, plasma cells and macrophages; slight glia cell accumulation along a few vessel sheaths; in one monkey, hemosiderin phagocytes in the sheath of one arteriole; moderate adventitial and intimal proliferation on one side of one arteriole and a few paravascular oval foci of small celled gliosis. The second monkey showed capillary thrombi and endothelial proliferation and slight lymphocyte infiltration in the sheaths of a few intracerebral vessels.

Rabbits inoculated with the eastern type of spotted fever develop febrile reactions after an incubation period of from four to seven days. Scrotal involvement, which in some instances was followed by ulceration and sloughing, has been noted in male rabbits.

The agglutinin response of monkeys to *Proteus* X_{19} (type O) has varied from complete in the 1:40 dilution to complete in the 1:1,280 dilution. Agglutination of *Proteus* X_{19} by the serums of rabbits has been noted. One rabbit serum gave complete agglutination in 1:80 dilution, incomplete in 1:320, and partial in 1:640.

TICK TRANSMISSION OF SPOTTED FEVER, EASTERN TYPE

In the series of cases recently reported by us, it was noted that all the patients with spotted fever in the Eastern states were either rural dwellers or had rural contact.[14] The seasonal distribution of cases corresponded with tick prevalence. A definite history of tick bite within two weeks prior to onset was elicited in 48 per cent of the cases. In 6 per cent of cases, patients had crushed engorged ticks removed from dogs.

The American dog tick (*Dermacentor variabilis*) has a wide range in the eastern part of the United States and is the common tick of the sections in which the eastern type of spotted fever has been found. Like *Dermacentor andersoni,* the female of this species attaches to its host and feeds to engorgement. When engorged, she drops to the ground and lays her eggs. These eggs hatch into six legged larvae, which again attach to a host and feed to engorgement. Dropping to the ground, the engorged larvae molt to eight legged nymphs. The same process of attaching, engorgement and molting occurs in the nymphal stage, the adult tick being then reached. In nature, it is probably very unusual for this tick to attach to more than one host in each of the feeding stages of its cycle. Consequently, to be of importance in perpetuating the disease, or in transmitting it to man, the infection must be received by the tick in one stage, retained through the egg or through a molt, and transmitted in a subsequent stage or stages. Occasional cases in human beings may result from crushing ticks when removing them from domestic animals.

In studying tick transmission of the eastern type of spotted fever, larvae of *Dermacentor variabilis* were fed on guinea-pigs that had been inoculated with strains of the virus. Since in each instance all the larvae from each female were fed on infected guinea-pigs, it cannot be stated definitely that the ticks were not infected when found. After engorgement these larvae were allowed to molt to nymphs. The nymphs were then fed on fresh, uninfected guinea-pigs. In two instances, of which detailed studies have been made, these fresh guinea-pigs developed febrile reactions three and four days after the nymphs were attached. One of these

21. Badger, L. F.; Dyer, R. E., and Rumreich, A. S.: Pub. Health Rep. 46: 463 (Feb. 27) 1931.
22. Parker, R. R.: Bull. 154, Hyg. Lab., U. S. P. H. S., 1930, p. 72.

guinea-pigs was bled from the heart on the fourth day of fever and the blood injected into fresh guinea-pigs. Each of these guinea-pigs developed febrile reactions. One of the recovered guinea-pigs from this "generation" and the guinea-pig on which the infected nymphs fed were subsequently found to be immune to the western type of spotted fever. This strain of virus was carried

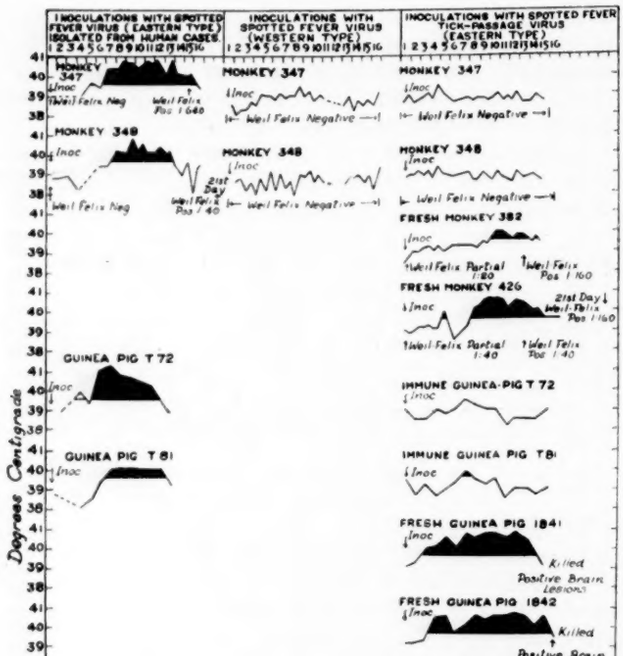

Chart 1.—Spotted fever eastern type virus immunizes to spotted fever western type virus. Human strain virus immunizes to tick-passage virus.

in guinea-pigs a few generations and then dropped. The brain from one guinea-pig killed on the eighth day of fever showed histologic changes typical of the eastern type of spotted fever.

A second guinea-pig, on which infected nymphs of another lot were fed, died in the eighth day of fever. The engorged nymphs from this animal were emulsified in physiologic solution of sodium chloride and injected into fresh guinea-pigs. This resulted in establishing a strain of virus which was studied in guinea-pigs, monkeys and rabbits.[23]

Nymphs fed as larvae on guinea-pigs infected with the eastern type of spotted fever and shown to have retained the infection as nymphs were allowed to molt to adults. Two adult males from one set of nymphs and two adult females from a second set were fed on a fresh guinea-pig. This animal developed fever six days after the ticks were attached. On the third day of fever this guinea-pig was killed and his blood transferred to fresh guinea pigs. The strain of virus thus established has been studied in guinea-pigs, monkeys and rabbits.

Histologic examination of the brains of guinea-pigs infected with tick-passage strains has shown the lesions which are typical of the eastern type of spotted fever.

23. Dyer, R. E.; Badger, L. F., and Rumreich, A. S.: Pub. Health Rep. **46**: 1403 (June 12) 1931.

Of eight monkeys inoculated with tick-passage virus, four have developed a rash. In one instance this was petechial and present only on the face, being especially noticeable on the upper eyelids.

Monkeys inoculated with tick-passage virus have developed agglutinins for *Proteus* X_{19} (type O).

Rabbits inoculated with the tick-passage virus have shown febrile reactions, scrotal involvement, and the development of agglutinins for *Proteus* X_{19} (type O).

CROSS IMMUNITY TESTS

Two strains of virus isolated from cases of the eastern type of spotted fever have been compared immunologically with each other; with the strains recovered from ticks; with a strain of epidemic European typhus; with a strain of endemic typhus virus, and with a strain of the western type of spotted fever from the Bitter Root Valley. There is no evidence of cross immunity between either of the typhus and the spotted fever, eastern type, strains. There is well established cross immunity between each of the eastern type spotted fever strains, and between the eastern strains and the western type spotted fever strain.

Chart 1 illustrates the results of one of the cross immunity tests referred to in table 1. In the chart chosen for illustration, monkeys 347 and 348, after reacting to inoculation with the eastern type of spotted fever virus, were later found immune to the western type of virus. These two monkeys, together with two guinea-pigs that had reacted following inoculation with spotted fever eastern type virus, failed to react when inoculated with spotted fever eastern type tick-passage

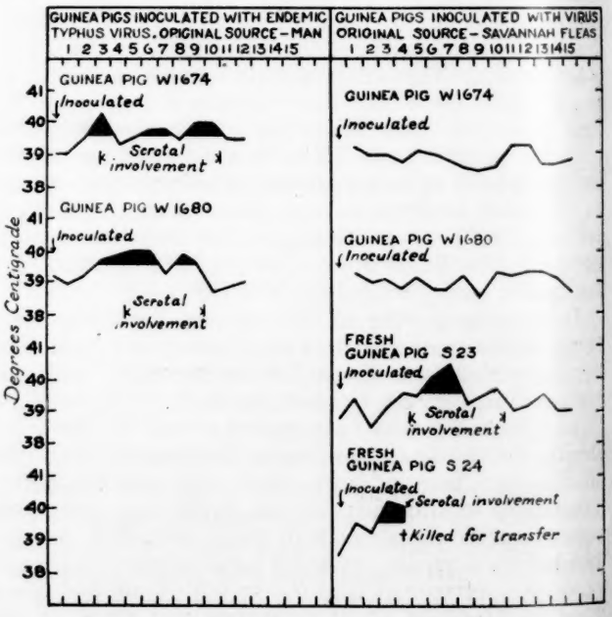
GUINEA PIGS INOCULATED WITH ENDEMIC TYPHUS VIRUS. ORIGINAL SOURCE—MAN
GUINEA PIGS INOCULATED WITH VIRUS ORIGINAL SOURCE—SAVANNAH FLEAS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
GUINEA PIG W1674
GUINEA PIG W1680
FRESH GUINEA PIG S 23
FRESH GUINEA PIG S 24
Inoculated
Scrotal involvement
Killed for transfer
Degrees Centigrade
41
40
39
38

Chart 2.—Cross immunity test: daily temperature records.

virus. Two fresh monkeys and four fresh guinea-pigs, inoculated at the same time with the same material, reacted typically.

A VECTOR OF ENDEMIC TYPHUS

As noted earlier in this paper, epidemiologic evidence gathered in studies of endemic typhus have indicated some blood-sucking parasite of the rat as the vector of endemic typhus. That the bedbug may be infected by intracoelomic injection and retain the virus in infectious form is shown by the recent work of Castaneda

and Zinsser.[24] The bedbug is in no wise incriminated by the epidemiologic evidence gathered to date. Ticks were considered as possible vectors until it was realized that cases diagnosed as typhus and giving a history of tick bite were in reality a type of spotted fever or a different clinical entity. Recently, Shelmire and Dove [25] have reported some cases of endemic typhus which have suggested to them the possibility of the tropical rat mite (*Liponyssus bacoti*) being the vector. As this mite bites both rat and man it must be considered as a possible vector. It is to be noted that rats caught by Shelmire and Dove, on premises which had yielded cases of endemic typhus, were infested with fleas as well as mites. As suggested by Zinsser,[26] it seems probable that several species of arthropods may be able to receive the virus of endemic typhus and preserve it in virulent form. Which arthropods are of importance in the

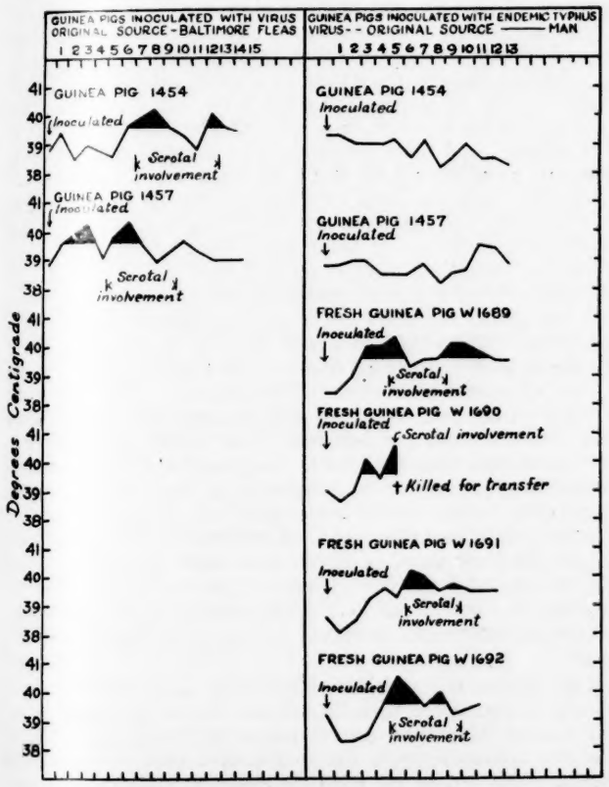

Chart 3.—Cross immunity test: daily temperature records.

production of human cases must rest in the last analysis on epidemiologic evidence, coupled with the finding of endemic typhus virus in arthropods procured from known foci of infection.

We [27] have recently reported the isolation of a virus identical with the virus of endemic typhus from fleas.

Several cases of endemic typhus occurred on premises in the immediate vicinity of food handling establishments in Baltimore in the late summer and fall of 1930. On these premises, evidence of heavy infestation with Norway rats was observed. Fleas removed from rats trapped on these premises were emulsified in salt solution and injected into guinea-pigs: This resulted in establishing a strain of virus which in animals is identical with the typhus virus derived from known human cases of endemic typhus. This was successfully repeated at two other locations in Baltimore where cases of typhus fever had occurred.

At a location in Savannah, Ga., where two cases of endemic typhus had occurred in the fall of 1930, rat

TABLE 1.—*Summary of Results of Cross Immunity Tests*

Guinea-Pigs Recovered from Infection Produced by the Virus of:	Later Found Immune to the Virus of:
Spotted fever, eastern type, strain H	Spotted fever, eastern type, strain T
Spotted fever, eastern type, strain T	Spotted fever, eastern type, strain H
Spotted fever, eastern type	Spotted fever, western type
Spotted fever, eastern type, tick passage	Spotted fever, eastern type
Spotted fever, eastern type, tick passage	Spotted fever, western type
Spotted fever, eastern type	Spotted fever, eastern type, tick passage
Spotted fever, western type	Spotted fever, eastern type
Monkeys Recovered from Infection Produced by the Virus of:	**Later Found Immune to the Virus of:**
Spotted fever, eastern type	Spotted fever, western type
Spotted fever, eastern type, tick passage	Spotted fever, western type
Guinea-pigs vaccinated with spotted fever, western type, vaccine	Later found immune to spotted fever, eastern type, tick-passage virus
Monkeys vaccinated with spotted fever, western type, vaccine	Later found immune to spotted fever, eastern type, virus
Guinea-Pigs Recovered from Infection Produced by the virus of:	**Later Found Susceptible to the Virus of:**
European epidemic typhus	Spotted fever, eastern type
Endemic typhus	Spotted fever, eastern type
Spotted fever, eastern type	European epidemic typhus
Spotted fever, eastern type	Endemic typhus

fleas were procured and injected into guinea-pigs. Again we were successful in establishing a strain of virus.

The fleas injected to date have been *Xenopsylla cheopis* and *Ceratophyllus fasciatus* in the three Baltimore instances, and *Xenopsylla cheopis* and *Leptopsylla musculi* in the Savannah instance.

The strains of virus derived from fleas have shown in animals the reactions which are identical with those produced by the Wilmington strain of endemic typhus virus isolated from a human case of the disease by Maxcy,[28] in 1928, and maintained at the National Institute of Health since that time.

In guinea-pigs inoculated with flea virus the febrile reaction occurs after an incubation period of from one to twelve days, depending on the material used for inoculation and the route chosen. The material used for the transfer of virus from guinea-pigs has been brain emulsion, blood, or testicular washings. The

TABLE 2.—*Summary of Results of Cross Immunity Tests*

Guinea-Pigs Recovered from Infection Produced by the Virus of:	Later Found Immune to the Virus of:
Baltimore flea strain	Savannah flea strain
Savannah flea strain	Baltimore flea strain
Baltimore flea strain	European epidemic typhus
Savannah flea strain	European epidemic typhus
Baltimore flea strain	Endemic typhus (Wilmington)
Savannah flea strain	Endemic typhus (Wilmington)
European epidemic typhus	Baltimore flea strain
Endemic typhus (Wilmington)	Baltimore flea strain
Endemic typhus (Wilmington)	Savannah flea strain

injection of testicular washings, as a rule, results in shorter periods of incubation than injections of either brain emulsion or blood. In preparing the testicular washings, the testicles are removed, rinsed in physiologic solution of sodium chloride and the rinsings then injected. Intraperitoneal inoculations are followed by

24. Ruiz Castaneda, M., and Zinsser, Hans: J. Exper. Med. **52**: 661 (Nov.) 1930.
25. Shelmire, Bedford; and Dove, W. E.: The Tropical Rat Mite, Liponyssus Bacoti Hirst, 1914, J. A. M. A. **96**: 579 (Feb. 21) 1931.
26. Zinsser, Hans: Personal communication to the authors.
27. Dyer, R. E.; Rumreich, A. S., and Badger, L. F.: Pub. Health Rep. **46**: 334 (Feb. 13) 1931.
28. Maxcy, K. F.: Pub. Health Rep. **44**: 589 (March 15) 1929.

shorter incubation periods than subcutaneous inoculations. The fever lasts from one to nine days in cases apparently uncomplicated by secondary infections.

The scrotal lesions characteristic of endemic typhus in guinea-pigs, and first seen by Neill [29] in guinea-pigs infected with Mexican tabardillo, are practically constant. *Rickettsia*, described by Mooser,[30] has been found in smears from the tunica vaginalis in both the Baltimore and the Savannah strains. Characteristic brain lesions have been found in both strains.

Monkeys and rabbits inoculated with the flea strains of virus develop febrile reactions and agglutinins for *Proteus* X_{19} (type O). In one instance the virus has been recovered from a monkey in the first day of fever induced by inoculation with the Savannah strain of flea virus.

Cross immunity is complete between the Baltimore flea strain of virus and the Savannah flea strain. It is likewise complete between either of these strains and the Wilmington strain of endemic typhus virus and a European strain of epidemic typhus virus which was procured from Dr. Breinl in 1928.

Charts 2 and 3 illustrate the cross immunity tests referred to in table 2.

CONCLUSIONS

1. A type of spotted fever exists in the Eastern states.
2. The tick as vector of the eastern type of spotted fever is incriminated by epidemiologic evidence.
3. Spotted fever, eastern type, virus will survive in the American dog tick (*Dermacentor variabilis*) through at least two molts. This tick can transmit the infection by feeding.
4. Epidemiologic evidence suggests the rat as a reservoir of endemic typhus.
5. Epidemiologic evidence suggests the rat flea as the vector.
6. The virus of endemic typhus has been recovered from fleas obtained from rats caught at typhus foci in Baltimore and Savannah.

National Institute of Health.

ABSTRACT OF DISCUSSION

DR. HANS ZINSSER, Boston: The investigation of typhus fever and Rocky Mountain spotted fever in this country is reaching a coordinating phase for all of us working on it because of a gradual encirclement by epidemiologic and experimental causes, and because of the interesting alternatives arising. Dr. Maxcy's epidemiologic investigation, in which he first determined the presence of what one may call typhus fever in its manifestations and other characteristics in the southeastern part of the United States, was the first step of great interest. I should say that probably Brill's disease, so called, was really European typhus fever that had been brought over the other way. What one speaks of as Maxcy's disease is hematologically identical with the Mexican disease. The next thing Maxcy did, which was interesting and new, was that in epidemiologic studies he failed to incriminate the louse. On the basis of previous observations and his own epidemiologic studies he pointed out the possibility of another method of transmission, the likelihood of a rodent reservoir (suggesting rats and mice), and the possible transmission from rat to man by another insect. That Drs. Dyer, Rumreich and Badger have found the virus in fleas taken off rats in typhus foci brings the subject closer still to Dr. Maxcy's tentative epidemiologic suggestion. As far as the reservoir of rats is concerned, I can now state, with my collaborators, Dr. Mooser and Dr. Castaneda, that we did discover the virus of typhus fever in the brains of rats trapped in the epidemiologic focus, at the Belen Prison, by pooling the brains of rats and injecting them into guinea-pigs. They are now in the fourth generation. By this work, I think, the chain as suggested by Dr. Maxcy in 1926, through the work the authors have reported on the fleas into the rat, is now complete. The question is, How does the disease get from rat to man? The authors have shown that the virus can live in fleas in a virulent form. Dr. Castaneda and I have kept the virus alive by rectal injection and by feeding bedbugs on typhus rats. We have been able to keep the virus alive by rectal injection into three different varieties of ticks. The bedbug work is being published; the tick work is in press. Shellmire and Dove have reported finding the virus in the tropical rat mite. Leaving out the louse, as proved of epidemic importance from man to man, one has as possibilities fleas, tropical mites, bedbugs and ticks. The flea work of Drs. Dyer, Rumreich and Badger is, I think, a neck ahead. They got them right from nature off the rats. I should like to have the authors discuss a point which impresses me in connection with the fleas. I have a prejudice in favor of bedbugs. In the first place, they bite anybody and anything, under any circumstances. They are not found on an animal because they bite and then leave the animal. The weight of a bedbug includes the weight of a cubic millimeter of blood, which is a lot of blood. The point is this—in Vera Cruz, that is, down on the seacoast, it is hot, and there are a lot of fleas and bedbugs, and there surely must be a lot of rats. Then if one goes up directly 7,300 feet from Vera Cruz in Mexico one finds fleas there too. But the flea is a tropical insect; it likes hot weather, and the louse doesn't. I think a bedbug would stand about anything. In Mexico City there are epidemics every year. In Vera Cruz there is rarely a case of typhus, although there is a daily, and sometimes twice daily, connection between the two places and there are a lot of passengers from one to the other. When there is a case in Vera Cruz it is a single accidental case that can be traced to Mexico City. This points to one of several alternatives. Perhaps the rats in Vera Cruz are not yet infected. All these years the rats have not wandered far. They haven't got infected. That might be the answer. Or perhaps the fleas are not the main insect and, being common to the two places, are probably a good deal more active in Vera Cruz because of the heat. In Vera Cruz, rats and fleas are as plentiful as in Mexico City, or more so. Or, there being no lice in Vera Cruz, or fewer on account of the heat, there may be an occasional case of typhus fever transmitted from rat to man in Vera Cruz, which isn't noticed because it doesn't become epidemiologically spread because of the absence of the lice.

DR. KENNETH F. MAXCY, University, Va.: As much as I should like to agree with Dr. Zinsser in his incrimination of the bedbug, there are several points in the epidemiology of endemic typhus fever in the southeastern part of the United States which are, to my mind, decidedly at variance with such an hypothesis. In the first place, although I have questioned large numbers of patients and their families with regard to possible insect bites and particularly with regard to this particular insect, the response has been almost uniformly negative. As a rule people are conscious of the presence of bedbugs and, if approached in the proper manner, would give a history of such infestation. Such history has been significantly infrequent. The occurrence of more than one case in the same household is unusual. If the bedbug were the vector one would expect more of a familial distribution since this insect is wont to distribute his affections rather indiscriminately. The grouping of cases has suggested that the infection is contracted more frequently in the place of business rather than in the home. The reverse would be expected if the bedbug were the vector. Finally, there has been no association of the disease with uncleanly surroundings in the home and no outbreaks in third class hotels and boarding houses. On the other hand, the epidemiology of typhus fever in the southeastern part of the United States is entirely consistent with transmission by a flea. In fact, in my early observations I was struck with the similarity of the epidemiology of this disease with that of bubonic plague in the United States, and called attention to this fact. Its sporadic occurrence, the rarity of contact cases, the association of cases (sometimes after a considerable time) with rat-infested premises, the occupational

29. Neill, M. H.: Pub. Health Rep. **32**: 1105 (July 13) 1917.
30. Mooser, H., and Dummer, Clyde: J. Exper. Med. **51**: 189 (Feb.) 1930.

hazard to food handlers, the seasonal maximum in late summer and fall—these and other facts were suggestive of a mechanism of transmission similar to that seen in bubonic plague. Yet it did not seem possible that these two diseases, which are so unlike, could be conveyed in the same way. The recovery of typhus virus from fleas captured in an endemic typhus focus, which has been here reported by Dyer, Rumreich and Badger, is to my mind conclusive proof that this insect is the chief vector of endemic typhus in the southeastern part of the United States. It must be borne in mind that the particular species of flea which is responsible has not yet been definitely established. It may be *Xenopsylla cheopis* or *Ceratophyllus fasciatus*. Further work is necessary before this particular point will become clear. I may say, however, that the geographic and seasonal distribution of the disease favors the former.

DR. ALBERT E. ROUSSEL, Philadelphia: The last localized epidemic of typhus in this territory was in New York in 1893, and in the previous year. In 1893 there were 473 cases with 200 deaths. In the fifteen years following this time Dr. Brill of New York in 1911 reported some cases and in 1912 and 1913 reported 321 cases, with the title "A New Disease Which in Some Respects Resembles Typhus." In 1912 Anderson and Goldberger, by the inoculation experiments, the first of this remarkable subsequent work which has since been carried on, practically proved to some of us at least that this was typhus fever. In 1914 I reported "Brill's Disease: Report of Four Cases of So-Called Brill's Disease as Compared with Forty-Seven Cases of Typhus Fever Under the Observation of the Author." I may say that the forty-seven cases of typhus fever, the last localized Philadelphia epidemic, were in the hospital on the other side of the street, the Philadelphia General Hospital. In this paper I tried to prove that Brill's disease was simply an attenuated modification of typhus fever and recommended that it be made reportable to the board of health. Dr. Brill did not accept Goldberger's experiments, or paper, nor did he accept this particular paper for a number of years afterward. But subsequently, with due credit to him, he made the *amende honorable*. I have seen a number of cases of Brill's disease since that time, possibly ten or a dozen, and I want to report one death that occurred two years ago in my service in the Graduate Hospital of the University of Pennsylvania: This patient with Brill's disease did not react to the Felix reaction, which is positive in about 90 per cent of the cases of typhus fever. In Brill's disease there is only about a 10 per cent reaction. This patient was doing well and was observed by a number of men, including a marine hospital physician who had treated 3,000 cases of typhus fever in Bulgaria during the war and subsequently. At about the time a crisis was taking place the temperature went up and the existing bronchitis which had been in evidence became a bronchopneumonia and the patient died. The point is that there must be other cases of this kind. About fifty are reported annually in New York and there are practically none reported in Philadelphia. They are probably mistaken for other conditions. Bronchopneumonia is the most frequent cause of death in typhus fever. I want to call attention to the fact that endemic typhus, which is called the attenuated typhus, was not recognized as such by Dr. Brill for a number of years after he had written his three original papers. Subsequently, he did recognize it.

DR. R. E. DYER, Washington, D. C.: In discussing athropods, which have been shown to retain the virus of typhus fever in virulent form, one should not fail to mention that Goldberger and Anderson in 1912 showed that the head louse was infectible by feeding. Dr. Zinsser has shown that the virus may be introduced by rectum into bedbugs and three types of ticks and may be retained by them. Drs. Shelmire and Dove have reported the infection of the tropical rat mite by feeding. I understood that, from what Dr. Zinsser said, Drs. Shelmire and Dove recovered the typhus virus from mites caught in the field.

DR. ZINSSER: I hadn't read Dr. Shelmire's paper, but my impression was that they found the virus in tropical rat mites which they had allowed to feed on typhus animals, not that they found the virus in mites collected in the field.

DR. BEDFORD SHELMIRE, Dallas, Texas: We did not find typhus virus in mites in nature as you have done with the flea.

DR. DYER: In the last analysis, the part played by any arthropod in the transmission of typhus must rest on epidemiologic evidence coupled with the finding of typhus-infected arthropods in nature. Dr. Maxcy in his discussion has clearly shown that the body louse, the head louse and the bedbug are definitely ruled out by epidemiologic evidence. Ticks were once considered by us as possible vectors until we found that cases of supposed typhus giving a history of tick bite were in reality cases of Rocky Mountain spotted fever. I mentioned a moment ago that I failed to recover the tropical rat mite at the typhus foci where I found infected fleas. In regard to Dr. Zinsser's question concerning the presence of fleas in Vera Cruz and the absence of typhus, it may be, as Dr. Zinsser suggested, that cases of mild typhus exist there, unrecognized.

AN APPRAISAL OF THE PRESENT TREATMENT OF DIABETES *

ELLIOTT P. JOSLIN, M.D.
BOSTON

The present treatment of diabetes is better than is often thought, and, therefore, one should be slow to depart from standard methods. The average patient who consulted me in January, 1931, had already lived half again as long (6.1 years) as his confrère of January, 1922. Indeed, judged by the duration of his disease the average diabetic patient in January, 1931, would have been dead in the January prior to the discovery of insulin, because at that time the total span of life of the diabetic patient did not exceed six years. Furthermore, this January's diabetic patient was older by eight years, his average age being 50 years instead of 42. The proportion of males had decreased to 44 per cent in contrast to 47 per cent in 1921 and 55 per cent a decade before, again illustrating the remarkable change that has taken place in diabetic sex distribution. In table 1 are shown the advancing age and duration of a living diabetic clientêle in 1931 as compared with 1922.

The first year of diabetes is now the safest for the patient, whereas formerly it was the most serious. Chart 1 shows this gradual fall in first year mortality for the Naunyn, Allen and the early and late Banting epochs. First year mortality cannot drop much lower than the 4 per cent it has now reached, because so many cases are encountered in the aged. This is evident in table 1; there was not a single case seen in January, 1922, with onset above the age of 70, but in January, 1931, there were thirteen cases.

Today every physician realizes that coma is an accident or the result of neglect, and, although arteriosclerosis has largely taken its place in diabetic mortality, diabetic gangrene, which is its most common expression, occurs almost exclusively in the ignorant and indigent, so effective has been prophylaxis. A growing percentage of diabetic patients now outlive their life expectancy and a leading insurance company acknowledges that, since the discovery of insulin, diabetic mortality has decreased in the young and that its rise in the old is largely to be explained not by an increase in the disease but rather because of an increase in the total number of known diabetic patients. This is well shown in chart 2, which depicts the decrease in mortality following the introduction of insulin in Massachusetts in ages under 50, the constant level between the

* From the New England Deaconess Hospital.
* Read before the Section on Practice of Medicine at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 11, 1931.

ages of 50 and 59 and the sharp rise over 60, which, as a matter of fact, is largely due to deaths of females. Table 2 presents a group of diabetic patients who have lived longer with diabetes than they were expected to live without it. It is noticeable that in the first series of 1,000 cases there were thirty-seven of these so-called medal patients—we give a medal to such diabetic patients at the New England Deaconess Hospital—but that in the second thousand, which represents a much more recent group, already there are thirty-nine, thus

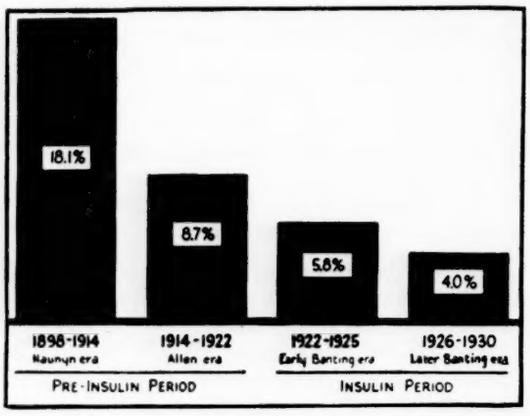

Chart 1.—Percentage of deaths in the first year after onset of diabetes.

obviously leaving far more possibilities for an accretion to the number from the remaining living members of the series. A study of the details of this table convinces me that soon, even if not today, we can say to the patient developing diabetes in the year of our Lord 1931 that the chances are certainly 1 in 10 and perhaps 1 in 5 of his living longer with diabetes than will his average neighbor of the same age without it. Unfortunately, thus far I have had only two patients under the age of 40 at the onset of diabetes who have surpassed this prescribed life's span.

Since the average duration of diabetes in the average living patient is now so much greater than that in the recently fatal case, the problems of treatment are new problems and must be recognized as such and met with an open mind. An unexplored diabetic land lures one on. With the wide divergence in types of treatment now in vogue, physicians and patients can easily become hopelessly confused unless fundamentals are emphasized by all.

Why has the mortality of diabetes above the age of 60 years risen? There are many reasons. The commonest age for diabetes is 50 years for women and a year or two later for men. Gradually the number at these ages in our population has grown. Whereas two generations ago 15 per cent of the people in Massachusetts were over 50, today 18 per cent are in this group, according to Lombard,[1] and for the United States, according to Dublin,[2] the number of aged persons between 1900 and 1920 has increased 60 per cent, whereas the total population has increased only 39 per cent in the same interval. As the average age at death of the general population is 44 years, it must be expected, unless preventive measures are taken, that diabetes will continue to increase until this average age at death reaches the fiftieth year, the leading year for the onset of the disease. Thus in Massachusetts there are 130,000 more individuals over 50 years of age today than there would have been had the age distribution of the population remained constant. And it is not strange that diabetes has advanced particularly in women at middle age, because with the menopause obesity is so universal and in the etiology of the disease that is such a prediposing factor. An increasing population of diabetic patients must be expected.

1. Lombard: Paper read before the National Conference of Social Work in June, 1930.
2. Dublin: Health and Wealth, New York, Harper & Brothers.

CHOLESTEROL AND AN OPEN MIND

No better illustration of the necessity for an open mind in the treatment of diabetes is afforded than in the consideration of the cholesterol content of the blood. Attempts to show the harm that results from its excess are still unsatisfactory. One would like to say that arteriosclerosis could be avoided, or at least postponed, if the cholesterol in the blood, as a representative of all the lipids, could be kept normal; and this may be true, but the evidence is insufficient. Quite as indefinite are the methods by which the cholesterol can be controlled. By no means is it necessary that the fat in the diet be low and the carbohydrate high in order to establish this result, as the following instances prove: An active minister, aged 60, with diabetes of fourteen years' duration, consulted me, March 7, 1931. The urine contained 0.2 per cent of sugar and the blood sugar was 0.26 per cent one hour after a meal. The diet that he had followed for fourteen years, and on which he remained practically sugar-free, contained as a maximum 55 Gm. of carbohydrate. He had not been treated with insulin. The cholesterol in an afternoon sample of blood was 223 mg. It will be understood why the cholesterol was normal, despite so low a carbohydrate, when I add that he was a patient of F. M. Allen, and the total calories had been limited.

It is still confusing that a patient with diabetes of nine years' duration and a diet of six eggs a day for months showed cholesterol values that only varied between 207 and 262 mg. Likewise, it is a matter for wonderment that a woman who, at the age of 23 years, with diabetes of five years' duration with calcified arteries in her legs and calcification of the pancreas, had a cholesterol value of 102 mg. in September, 1927, but now in 1931, while apparently in blooming health on a diet of 112 Gm. of carbohydrate, 73 Gm. of protein, and 120 Gm. of fat, is free from pains in her legs, an active school teacher and her cholesterol is only 67 mg. Cholesterol—what a delightful riddle to solve!

TABLE 1.—*Diabetic Patients in January, 1922 and 1931, Compared*

	1922		1931	
Duration, years	4.1		6.1	
Age, years	42		50	
Males, per cent	47		44	
Onset, Decade	Number of Cases	Duration, Years	Number of Cases	Duration, Years
First to third	26	2.9	87	3.9
Fourth to seventh	87	4.4	290	6.9
Eighth and ninth	0	...	13	2.1

Hypercholesteremia is probably fairly uncommon in our present group of patients. Of 164 adult patients, selected over a period of two years (1929-1931) because of suspected hypercholesteremia, 62 had high cholesterol values, i. e., above 0.23 per cent, the maximal normal value established by Bloor. The highest of these abnormal values were found in the early rather than in the late stages of arteriosclerosis, in the blood of patients with coexisting nephritis or pregnancy, and in

cases associated with high blood pressure, gallstones and xanthoma. Before ascribing importance to such data, Hazel Hunt and Priscilla White will analyze and report on the data obtained in our patients who show low values for cholesterol as well as on the values recently obtained in diabetic children. Further evidence must be awaited before patients are urged to adopt special dietetic procedures other than avoidance of overnutrition in order to lower their cholesterol. There is certainly need for information from the clinics in Lund, Ann Arbor and the Montreal General Hospital, as well as from the Sansum, Geyelin, the present Rabinowitch series, and the cases of Adlersberg and Porges. Lack of knowledge, which time alone can rectify, compels the adoption of a middle course by those who are not in a position to carry on detailed investigations or who, because of large numbers of patients, must avoid confusion in the minds of their clientele by rapid changes in types of treatment. My

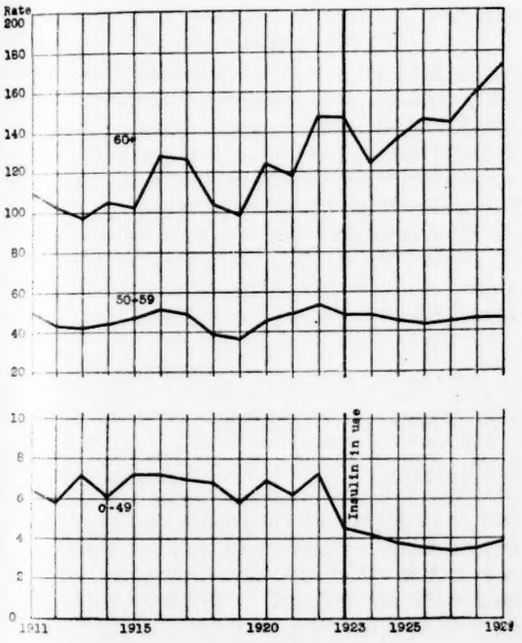

Chart 2.—Diabetes mellitis in Massachusetts: deaths per hundred thousand of population.

five standard cases were reported two years ago.[3] The patients are still alive and compel me to avoid extremes (table 3) just as do the medal diabetic patients (table 2). This point was emphasized by Woodyatt [4] years ago when he pointed out the favorable course of the middle aged diabetic patient.

CONTROL CASES

Every physician should have his control diabetic cases so as not to be led astray by new methods of treatment. One should always carry a list of one's best patients in one's pocket, the ages and dates of onset of the chosen five, so that when some wonderful case is demonstrated one can say Why, my patient has done just as well (or very likely better) under the treatment I adopted years ago. Soon, however, one will find that the control cases collected or perhaps reported ten years or even five years before are out of date, because one's treatment has improved so much; but even that is a satisfaction.

3. Joslin, E. P.: Insulin and Carbohydrate Tolerance, Ann. Int. Med. **2**: 1001 (April) 1929.
4. Woodyatt, R. T.: South. M. J. **17**: 145 (March) 1924.

EDUCATION

Diabetes will never be successfully attacked until the patient, his family, the community, the physician and the hospital are trained in the prevention and treatment of the disease and its complications and have the facilities for treatment within reach. Wandering Diabetic Nurses should be available for the general practitioner because they will not only save his time but also carry into the homes of the patients ideas about insulin and diet, and the avoidance of coma and gangrene. The endowment of a Wandering Diabetic Nurse for a year is no more than the endowment of one diabetic bed in

TABLE 2.—*Diabetic Patients Outliving Life's Expectancy: Medal Cases to March, 1931, Based on Insurance Tables*

Successive Thousands	Total Cases	Onset Decade, Years	Total Cases
1st	37	Third	1
2d	39	Fourth	1
3d	26	Fifth	18
4th	30	Sixth	68
5th	19	Seventh	70
6th	10	Eighth	22
7th	17	Ninth	1
8th	3		

a hospital. One of these nurses during two months last spring visited twenty homes and had 460 interviews with patients, besides giving several hours of classroom instruction. In Massachusetts there are 14,000 diabetic patients. Ten nurses could visit in their homes all the new patients of this group and have plenty of time for the instruction of the remainder who required assistance. Why should there not be many endowed or partly endowed Wandering Diabetic Nurses? The well-to-do diabetic patient who has a private nurse often might place that nurse for an hour or more a day at the disposal of a physician to teach other diabetic patients. It would brighten the wits of the nurse, help the physician, and save many diabetic lives. I recall several patients who do this. The big Foundations throughout the country need not be asked to endow all these Wandering Diabetic Nurses. Let each physician ask his patients individually to endow such a nurse in whole or in part. Hospitals also must adjust their staffs and their personnel to the treatment of diabetes. Technicians must as cheerfully work all night for a diabetic patient in coma as an obstetrician or a surgeon sacrifices

TABLE 3.—*Five Standard Cases*

Case Number	Onset, Age	Duration, Years	Weight, Kg.	Diet in Grams May 1931 C.	P.	F.	Insulin, Total Units
359	33.0	21.3	62	254	67	96	15
632	30.0	18.8	61	137	85	123	30
1616	5.5	11.8	40	160	97	127	46
2084	3.2	11.9	34	150	85	71	32
2560	5.0	9.9	49	138	89	125	22

rest for a woman in confinement or a patient with appendicitis. Hospitals likewise must standardize both their medical and their surgical methods of treatment and even go further and actively teach the prevention of diabetic complications and seek to avert the development of diabetes in patients susceptible to it as are those with disease of the thyroid and biliary tract.

DIETETIC TREATMENT

I think that every physician in the United States treats his patients differently today than did the physician ten years ago. By way of illustration, in table 4

are recorded six groups of thirty cases each that were under observation between 1915 and 1931. In the early days of the Allen era the average carbohydrate of the first series was 26 Gm. Even without insulin it rose in the latter part of that era to 43 Gm. and, following the introduction of insulin, reached 71 Gm. in 1923, and 96 Gm. in 1927. Now I find that the average carbohydrate in representative groups at the New England Deaconess Hospital varies between 125 and 144 Gm. Some may not have changed their dietary prescription as much and others may have changed more, but surely insulin has steadily increased the carbohydrate in the diet. The point of view of one who has clung long to a low carbohydrate diet and then suddenly changed to a very high carbohydrate diet is interesting, because to him the contrast in the two groups of cases is so great. From experiences of this type one can learn much, but it would be welcomed if the opinion could be known of physicians who have treated their cases in a reverse direction. I suspect that if some of the advocates of a high carbohydrate diet should study and loyally carry out the treatment advocated in Lund and Ann Arbor they would be astonished at the good results obtained. However, for me the criteria of treatment of the diabetic patient must be based on the results obtained with children rather than with adults, because adults

TABLE 4.—*The Dietetic Treatment of Six Groups of Thirty Cases Each of Diabetes*

Date	Diet in Grams			Calories per Kilogram	Insulin, Units	Age at Onset	Weight in Kilograms	Duration, Years*
	Carbohydrate	Protein	Fat					
1915	26	54	76	18	..	40	57	9.6
1916	43	60	82	21	..	46	56	7.7
1917	43	60	90	23	..	42	54	7.9
1923	71	58	123	34	13	37	53	6.9
1927	96	60	113	28	21	46	59	5.6
1931	144	68	90	32	21	43	58	2.9

* Compiled to July 1, 1927, except for cases seen in 1931.

do well under a wide variety of circumstances. Even the quack has no fear of treating the adult, but he does shy at a diabetic child. Only from the children do I believe that physicians will learn what the best methods are.

The diet selected for a diabetic patient should be such that it will allow him to disclose the benign nature of his disease, and to this end all agree that the total calories should not promote overnutrition. Avoidance of overweight is a fundamental principle of diabetic treatment, and discussions and differences about details in the make-up of the total calories are of minor importance in comparison. Reduction of body weight, however, must be gradual or else the high consumption of fat, which is the concomitant of rapid loss of weight, will thrust the patient on so high a proportion of fat in the diet that no careful practitioner would countenance it. It is perhaps fair to say that at present a carbohydrate content of the diabetic diet between 100 and 200 Gm. can be accepted as a standard range, whereas below 100 Gm. is almost as experimental as a carbohydrate content above 200 Gm. The protein by common consent varies between 3 Gm. for a young child and 1 Gm. or 0.6 Gm. per kilogram for the adult or nephritic patient. As for fat and carbohydrate, I like to look on them as two children who sit on opposite ends of a seesaw and the more the one goes up the more the other must go down, but both are safe if the saw horse is not overloaded or so high that neither end reaches an extreme position.

HIGH CARBOHYDRATE

My experience and observations on cases with either a very high or a very low carbohydrate are not quite fair, because I am more apt to see the patient who is not doing well. I have found reactions more common and troublesome with the high carbohydrate diet, and larger doses of carbohydrate required to offset them, and they resemble those which occur in the carelessly treated diabetic patient. The amount of insulin administered is distinctly high. Some patients who have lived on the high carbohydrate diet for some years prefer to lower it below 200 Gm., even to 150 Gm., so that they can have 100 Gm. of fat. The high carbohydrate-low fat diet is difficult for college students to secure, and they find it practically impossible to keep the fat sufficiently low to make it effective and therefore revert to a diet of carbohydrate 150 Gm., which, I believe, is about the most common diet of the average diabetic patient in the country today who has ever been under the direct care of a physician. On this he is comfortable.

LOW CARBOHYDRATE

By this I mean a diet with carbohydrate under 50 Gm. Of these cases I see none, and indeed I see very few whose carbohydrate is under 100 Gm., and it is for this reason that I have placed the accepted standard diet as between carbohydrate 100 Gm. and 200 Gm. Petrén's patients really received more than 50 Gm. of carbohydrate because vegetables were allowed freely and usually some bread, but his patients, like those of Adlersberg and Porges, were chiefly adults, who will tolerate almost any diet that is not excessive in calories.

INSULIN

The skin of the diabetic patient is vulnerable because it contains sugar instead of glycogen; his muscles are weak, especially those of his heart, if not supplied with glycogen, and it is possible, as Klotz has suggested, that the media of his arteries degenerates prematurely from a lack of it; a shortage of glycogen and an accumulation of fat characterize the liver of a diabetic patient on the eve of coma. Yet all these abnormalities become rectified with insulin and to it every diabetic patient should turn if other simpler measures fail to supply his glycogen want. One should champion neither a large nor a small dose but rather see to it that the dose is adequate. Recently the average dose at the hospital for a group of patients was 17 units daily, and the same month for all patients who were taking insulin, and this constituted two thirds of the total number, was 23 units. The hospital dose is not the home dose and never can be, because the two environments are so dissimilar. One old man under the care of an able practitioner took 100 units daily with excellent effect. One or two daily injections usually suffice, and it is encouraging that some children who have had diabetes for nearly ten years need no more. If required, a third dose can be given before retiring, but it must be small, and usually from 2 to 5 units will be sufficient to produce a sugar-free urine on arising, and this implies a liver stored with glycogen with which to begin the day.

The adjustment of insulin to diet and to exercise becomes easier with practice. The patient soon learns the need of more insulin in the presence of an infection, and mothers often administer during such illnesses every three, four or six hours, as the case may be, 15 units if a red (Benedict) test, 10 units if a yellow, 5 units if a green, and no insulin if sugar-free. Indeed,

this rule holds after operations. The site of the injection must be varied to prevent induration of the skin and to avoid insulin atrophies. It is as essential and as modern, too, for a diabetic patient to carry two lumps of sugar in his pocket for use in a reaction as for a physician to carry an ampule of dextrose in his bag for intravenous use in diabetes or heart disease.

Our routine discharge directions for diabetic patients to carry with them include the following special instructions, because an insulin shock may be erroneously diagnosed diabetic coma, and the error may result in death:

SPECIAL DIRECTIONS

Special instructions to prevent and distinguish between diabetic coma and an insulin reaction. Remember coma comes on gradually in days or hours, an insulin shock usually in less than an hour or in a few minutes. Coma comes from too much food and too little insulin: a reaction from too little food and too much insulin. In coma the urine contains sugar, but in a reaction although the first specimen may show sugar, a second specimen invariably will be almost sugar free. The respiration in coma is heavy and deep, but in insulin shock is feeble.

I. *To Prevent Diabetic Coma.*

(*a*) Never omit insulin unless the urine is sugar free. Keep to your diet and in case of an infection take more insulin if necessary to keep sugar free.

(*b*) If you feel sick, especially if you have fever, nausea and vomiting or severe pains in the abdomen: 1. Go to bed. 2. Call a doctor. 3. Take a cup of tea, coffee, cocoa shells or broth every hour. Omit at least one-half your diet and instead take orange juice or oatmeal gruel. If the urine contains sugar, take insulin every hour under your doctor's direction. 4. Get someone, a relative, a friend or nurse to devote their entire time to you until you are well. 5. Move the bowels with an enema.

(*c*) Boil a quart of water to have ready for your physician in case he thinks it necessary to give salt solution under the skin.

II. *To Treat an Insulin Reaction.*—The following symptoms may occur from 1 to 8 hours after taking insulin, and are due to: 1. Too much insulin. 2. Too long a period between insulin and food. 3. Food given has been unabsorbed because of indigestion, vomiting or diarrhea. 4. Unusual exercise.

Symptoms: 1. Trembling, weakness. 2. Pallor, faintness (take the juice of an orange or a lump of sugar or with little children give injection of Karo syrup or glucose. 3. Headache, double vision, nervousness. 4. Sweating. 5. Unconsciousness. If necessary give 0.5 cc. adrenalin chloride 1:1000 solution hypodermically and repeat in 15 minutes. With return to consciousness as soon as possible give the juice of an orange by mouth. Ten per cent glucose solution may be given by rectum, under the skin or intravenously if a doctor so directs.

III. The best insurance a diabetic patient can have is to see his physician once a month. Take him this paper and a specimen of urine. Always carry this sheet with you or wear an identification tag with your name, address and the words Diabetic Coma or Insulin Shock. Which?

EXERCISE

Our new diabetic clinic will have a playground for the children on its roof and a combined solarium, playroom and gymnasium for cold or rainy days. Almost a generation ago a physician told me that when camping in the woods and taking long hikes he could eat more freely and yet show less glycosuria. Disuse of muscles, whether from rheumatism or from confinement in bed, makes a mild diabetes seem severe. The dangers attending operations on diabetic patients formerly were due more to the lack of exercise involved than to the disease, and it might be added parenthetically that the other danger was the lack of carbohydrate after operation which the nausea and vomiting of the anesthetic precluded. Every one knows that the diabetic patient should be the cleanest citizen in the community on account of his vulnerable skin, but it is not equally well known that his muscles should be stimulated by exercise. In truth, he should adopt for his body the training of a Roman gentleman, as he does that of a Spartan for his soul.

QUACK AND PROPRIETARY MEDICINES

A patient consults a doctor and says his physician has given him pills for his diabetes. What can the consultant say? How can he protect the reputation or the judgment of the practitioner who did what no doctor in the world, recognized as an authority by his brother practitioners, would recommend? The reputation of the individual who prescribes nostrums for diabetes suffers in the long run.

The middle aged diabetic patient is the prey of the quack. A diet that prevents overnutrition will allow such a patient to live long, even with the most bizarre allotments of calories to carbohydrate, protein and fat. On examining the testimonials for nostrums one seldom, if ever, finds a reference to a child.

COMA

An infant or a woman of 73 can recover from coma, but the danger increases with age, and the treatment is not the same. With the former there is the advantage of a sound heart and kidneys and a diabetes of short duration; with the latter a damaged heart and kidneys and usually diabetes of long standing. Dehydration must be overcome in both, but with the old one must proceed cautiously so as not to overwhelm the heart with sudden measures, such as intravenous infusions given quickly or by the use of caffeine or a cardiac stimulant to exhaust its store of glycogen. One must not block the kidneys with sodium ions. I suspect that many a relatively mild case of diabetes in an adult in an early stage of acidosis has been driven to a fatal end by the renal block which sudden restriction of carbohydrate and use of alkalis brought on.

TABLE 5.—*Increase of Danger of Diabetic Coma with Age* *

Age at Coma by Decades	Total Cases	Fatal	
		Number	Per Cent
First	8	0	0
Second	66	2	3
Third	25	3	12
Fourth	19	2	11
Fifth	19	4	21
Sixth	21	9	43
Seventh	9	2	22
Eighth	3	1	33
Total	170	23	13.5

* Table includes all deaths, even from hopeless complications.

The quantity of insulin required to rescue a diabetic patient in coma varies extraordinarily. At the Deaconess Hospital two children have recovered with 25 units and 32 units, respectively, in twenty-four hours. These were cases in which the diabetes was of very short duration; indeed, it was during the coma in one that it was first diagnosed. In contrast, a boy, aged 14 years, with diabetes of one and a half years' duration, who had previously undergone coma, required 740 units in this second attack. We have seen similar but not such extreme instances before. It is interesting to consider what might have happened if the treatment had been routine and the little children just mentioned had been subjected to such an enormous dose or the old offender

to the dose of a diabetic neophyte. Eternal vigilance and simultaneous observations by the bedside and in the laboratory day and night alone can save the patient in coma.

Without an autopsy, the fatal case of coma can teach few lessons. In 170 cases of coma since 1922, we have had 23 deaths. In two of these there was a suppurative pancreatitis. If we had had no autopsy, we should be still wondering and blaming ourselves that no recovery was obtained in these two patients. One simply must have autopsies in diabetes if one is to progress in knowledge. Table 5 shows the incidence and mortality in diabetic coma in our cases treated at the New England Deaconess Hospital since 1922.

TABLE 6.—*Diabetic Surgery—Insulin Era*

	Five Years 1923-1927	Three Years 1928-1930
Operations, total	548	580
Mortality, per cent	9.3	5.9
Gangrene and allied states	181	192
Laparotomies	78	75
Carbuncles and abscesses	74	86
Thyroid	68	54
Cancer	14	30
Miscellaneous	133	143

The dilated stomach in diabetic coma is a serious complication. It may require lavage more than once, but always with the greatest gentleness, because a death during lavage has been reported, and we also have had one such death. I feel quite certain that a dilated stomach, overlooked, may cause death. The importance of overcoming the dehydration is generally recognized. The use of caffeine sodiobenzoate, which I have advocated for several years, has been so seriously questioned as a result of the work of Long on the action of caffeine in discharging glycogen from the heart muscle that I may not use it with my next series of cases. Geiling has shown the difficulty with which the heart muscle of a diabetic patient utilizes dextrose, and one certainly does not wish to embarrass the heart still more by removing the glycogen which it has.

CARDIOVASCULAR COMPLICATIONS

If the suggestion of Klotz of Toronto that insulin may protect the median muscular coat of the diabetic patients' blood vessels should prove true, what a profound alteration will take place in the causes of diabetic mortality! Already there have been great shifts. A generation ago the patients died of tuberculosis, half a generation ago they succumbed to coma, now it is arteriosclerosis; but this, too, may be transitory with the more normal diets which modern dietetic treatment and insulin allow. In my own cases already cancer has trebled as a cause.

The second bright spot to me when contemplating these arteriosclerotic deaths is the knowledge that although twenty-two of our diabetic children have thus far shown arteriosclerosis by autopsy or on roentgen examination, thus far no child treated with insulin from the onset of his diabetes has appeared to be so afflicted. Of course, our children who have been treated with insulin have had diabetes only eight years.

In heart disease insulin is a great help, and three of my physician-diabetic patients with poor hearts have been wonderfully rehabilitated by it. Caution is necessary to avoid hypoglycemia, because that is disastrous to the damaged heart; but it would be most unfortunate if fear of that prevented the employment of insulin. One should not speak of insulin angina but rather of hypoglycemic angina. Fifteen years ago I recorded the precipitation of that by a sudden change in diet, but not until several years later did I fully appreciate it. Diabetic patients with decompensated hearts frequently make remarkable gains in tolerance, and therefore diet and insulin dosage must be closely watched. My colleague, Howard F. Root, has recently reported 210 cases of angina in our series, but as yet we have not accumulated enough data with the electrocardiogram to compare the length of life of diabetic with nondiabetic patients after certain of its characteristic changes.

FAILURE OF TREATMENT

The treatment of diabetes fails largely because of remediable faults. When the blood sugar is known, treatment can go ahead boldly and scientifically. With opportunities for blood sugar tests, confusion between coma and insulin shock will grow less and less. Blood sugar tests are not everything, but they are almost life saving on occasion. If the physician in the country is expected to treat his patients as well as the physician in the city he must be given the same advantages which are given the city physician. The city physician who works in a hospital is practically endowed because he has the advantages of the endowments of a hospital; the practitioner in the country must be similarly endowed and deserves it just as much as the city physician. He must have a laboratory within reach and available day and night.

Blood sugar reports have their dangers to the patient if not rightly interpreted. Just because an individual chances to have a blood sugar a trifle above normal and yet a sugar-free urine is no reason for radically restricting the diet. It is almost better that his blood sugar should not be known. Such an individual deserves liberal carbohydrate with plenty of exercise, rest and good hygiene, and a maintenance of weight and, with all, continued observation. Moreover, one should always remember that the twenty-four hour urine shows the condition of the patient for a day; the blood sugar test shows the condition of the patient for a single instant. If the carbohydrate in the diet is lowered, the tolerance of the patient may be lowered, too, and I really believe that the development of diabetes is not unusual as a result of the radical restriction of carbohydrate for the treatment of obesity. I am almost as much concerned about the treatment of a person potentially diabetic or an unclassified case of glycosuria as I am about a case of actual diabetes.

TABLE 7.—*Diabetic Children*

Period of First Visit	Total Cases	Living April, 1931	
		Number	Per Cent
Naunyn, 1898-1914	61	1	2
Allen, 1914-1922	170	49	28
Banting, 1922-1931	485	450	94

Treatment often fails simply because the patient has not been taught to avoid conditions that lead to gangrene. Every artifice or catchword one can employ to impress these on the patient will yield unlooked-for returns.

SURGERY

Already every other diabetic patient is a surgical patient, but old age diabetic surgery must continue to increase. These older diabetic patients cannot tolerate infections which one would risk in nondiabetic patients. Questionable teeth, questionable tonsils, gallstones and

even an appendix must now come out to guard the tolerance of the diabetic patient. Ten years ago a diabetic patient was regarded as a grave surgical risk, but today it is a graver medical risk to withhold surgery.

Cooperation between physician and surgeon, close observation of the urine and of the blood for the first few days after operation, provision for from 50 to 100 Gm. of carbohydrate to maintain nutrition, and, along with it, insulin if necessary to promote its utilization and thus avoid acidosis, are factors that make diabetic surgery safe.

Perhaps the extra attention that the surgical diabetic patient attracts has much to do with the increasingly better results now obtained. Table 6 shows the increase in cases and the decrease in mortality over a period of five years as compared with a recent period of three years. The mortality for 548 operations in the first period was 9.3 per cent, but in the second period was 5.9 per cent. The change in the character of the surgery is striking but perhaps is influenced by local hospital conditions. Thus, surgery for cancer has trebled and for gangrene has nearly doubled, whereas for disease of the thyroid it has remained relatively constant. Carbuncles have decreased, possibly as the result of insistence on the cleanliness of the diabetic patient. Indeed, the diabetic patient should be the cleanest citizen in the community.

TABLE 8.—*Exceptional Duration of Sixty-Two Cases of Diabetes with Onset in Childhood* *

Duration, Years	Number of Cases
20	2
15	7
10	53

* Compiled from 500 living and 216 fatal cases to June, 1931.

CHILDREN

The diabetic child is still our teacher, and it is because after all these years of interest in diabetes I have more than twice as many diabetic children alive as dead that I am confident of the future. Of course, the child breaks his diet, but I have sometimes wondered whether the doctor who refused to forgive one of my children and discharged her from his care was familiar with that verse in the Bible which prescribes how many times he should be forgiven. I thought it was seven times, but my diabetic class told me it was seventy times seven. I plead for cooperation with the diabetic child. He needs it as much as he deserves it. He is trying to save his life and his instinct leads him astray, so that he is living between Scylla and Charybdis until he learns for himself the tricks of diabetes, diet, exercise and insulin. Instead of blaming a child because he breaks his bounds, one should find out why he does so and show him how he can get enough food and insulin to maintain energy and avoid a reaction, yet without harm to himself. Every trespass of a child should be considered an opportunity for constructive help. I can truly say that many children, who at one time were the distraction of us all because they followed their instincts, we now understand and acknowledge that they are doing well, whereas certain children who never broke a rule often cause us anxiety. I am optimistic because each June brings increasing numbers of invitations to college and high school graduations. I trust the diabetic child to teach us the treatment and to prove the benignity of diabetes, and I believe that our endeavors should be quite as much to remove the harmful aspects of his disease and to promote the precocity which goes with it as to prevent it.

In table 7 are detailed the diabetic children of the Naunyn, Allen and Banting epochs with the increasing percentage of living patients, 2 per cent, 28 per cent and 94 per cent, and in table 8 are the exceptional cases of children who have survived their disease for twenty, fifteen or ten years.

How could we get along without those who are diabetic? How much the world would have missed Ysaye and his violin, and what would it have done without Joffre and Clemenceau—not to mention the galaxy of noted diabetic patients in our own country!

81 Bay State Road.

ABSTRACT OF DISCUSSION

DR. F. M. ALLEN, Morristown, N. J.: The diet treatment of diabetes is not yet standardized, but there seems to be some approach toward a closer agreement. I myself have always preferred to avoid the extremes of high fat and high carbohydrate diets, chiefly because the high fat diets are less comfortable and the high carbohydrate diets usually make smooth regulation of the blood sugar more difficult. My impression is that no individual food or form of diet, but rather the inadequate control of the diabetes itself, conduces to arteriosclerosis and all other complications. The most important requirement throughout is the proper regulation of total calories and body weight. As I have written several times, if this principle is followed there is room for wide individual choice in the proportions of the different components of the diet. Though the death rate from diabetes may show some reduction, it is far from being sufficiently reduced. With the present treatment it is theoretically possible to enable practically every diabetic person to live out his full natural lifetime. In the practice of a relatively small number of specialists, this result is rather closely approached. It is by no means approached for the great mass of diabetic persons throughout the country. Physicians should have the same conscience as surgeons, in abstaining from any class of work in which their results are conspicuously below the best standards. It should be remembered that Dr. Joslin has compiled the best statistics on diabetes not only in this country but in the world. This is a valuable service, and it affords a standard of comparison for the results of others. One trouble is that the results in diabetes are not immediate and decisive as in most surgical work. Often the patients may be blamed for disobeying instructions, but the ability and the facilities to train patients effectively are part of the specialist's equipment. Many deaths may be counted as unavoidable because of complications, but it should be impressed as our duty above everything to prevent complications. With the present methods there should not be any deaths from uncomplicated diabetes. The test of any treatment lies in the ultimate results, and a clear conscience concerning the mortality is possible only when correct principles are applied thoroughly in every case.

DR. RUSSELL M. WILDER, Chicago: The results of treatment of diabetes since the introduction of insulin have been so highly satisfying that we should be slow to depart from the general principles that have guided our treatment thus far. These are, first, the avoidance of overfeeding, and, second, such complete control of the disease as to prevent its otherwise inevitable exacerbation. Whether these ends are accomplished with diets high or low in carbohydrate is less important. My experience has been that the second objective, the maintenance of continuous control of glycemia, becomes more difficult when much carbohydrate is fed, and for this reason I prefer diets in which the bulk of the calories, about 80 per cent, is supplied as fat. It is nevertheless clear that the relative proportions of the two major food factors, fat and carbohydrate, can be distorted within wide limits without jeopardizing results. A matter of grave importance in the planning of a diabetic diet is the fulfilment of the principles of good general nutrition. A careful estimate of calory requirement, so that actual energy needs are met and excess is avoided, is not enough. These

patients are expected to live a normal lifetime, and questions of satisfactory proteins and adequate supplies of minerals and vitamins must be given especial consideration. I have been impressed by the unusually good health of the diabetic children who have now survived for several years on diets planned with these principles in mind, especially by the unusual excellence of their teeth, their general endurance and their freedom from complicating infectious diseases. Among 167 of these recently surveyed, not one was reported as having symptoms of tuberculosis. This is significant because in former days tuberculosis was a common complication of diabetes in the young. Nor have I observed in these children any degenerative lesion of the cardiovascular system; in particular, arteriosclerosis has not been found, although I have searched for it diligently in all cases that I have been able to reexamine. I am inclined to attribute the satisfactory health of these children in part to the inclusion in the diets of a liberal quantity of milk, eggs, fruits and green vegetables. My practice now is to provide for all children at least one pint of milk, in addition to the fairly large allowance of cream, two eggs, and from 200 to 400 Gm. of uncooked fruits and leafy vegetables.

DR. A. A. HEROLD, Shreveport, La.: Since the advent of insulin I have had under observation a series of children, aged 5 years or more, and every one of them is getting along very well. The great trouble, however, has been to steer the children clear of hypoglycemia with its attendant reactions and at the same time keep the blood sugar low enough to keep the urine free from sugar. I have always instructed the parents in the handling of these insulin reactions, but my final conclusion is that one cannot avoid the reaction in these small bodies if one wishes to keep the blood sugar low enough to keep the urine free from sugar. In this connection I wish to stress the necessity of occasional blood sugar readings in these children, because keeping the urine free from sugar means little in these cases. The small bodies seem to have a property of making more insulin at one time than at others. In one case especially there has been a marked rise in the renal threshold; whereas the patient formerly showed glycosuria, with the blood sugar below 200, now the blood sugar has to be in the neighborhood of 400 before she will show sugar in the urine.

DR. E. P. JOSLIN, Boston: It is encouraging to hear the experiences of Dr. Wilder with his diabetic children and also Dr. Allen's experiences with the diet. I still, however, again would call attention to the necessity of remembering that many are treating diabetes in different ways than have been discussed here this morning, and that these other methods in the hands of those who use them often give remarkably good results; and we should, therefore, always be careful in talking with our patients not to disparage these other methods. We can always clarify the situation if we bring out that one idea, with which every one agrees, that the total diet must be limited, and that if the carbohydrate goes up in the diet the fat must go down, and vice versa. In a monograph, soon to be brought out by my associate Dr. Priscilla White, the questions raised regarding diabetic children will be answered. One word about diabetic coma: One must always bear in mind that there is a tremendous variance in the dosage of insulin. One patient will recover with 25 units, and another may recover, as one of ours recently did, with 740 units. One must never say if the patient does not recover with 200 or 300 units that the case is hopeless; furthermore, in a case of diabetic coma in which the patient dies, a necropsy should be demanded, because otherwise one loses confidence in insulin. In two recent cases in young adults, the only fatal ones in all our cases of coma since 1922, necropsy showed an acute suppurative pancreatitis with fat necrosis in the mesentery.

Spores in Mushrooms.—Most toadstools are edible, but a few cause discomfort, and a very few, *Amanita phalloides* in particular, are deadly poison. It is usually possible to identify the fungus concerned by the examination of the spores found in the intestine: These are in abundance, for a mushroom of ordinary size has about two million millions of them.—Bulloch and others: A System of Bacteriology, London, His Majesty's Stationery Office, 1931.

TREATMENT OF GOITER COMPLICATING PREGNANCY*

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AND
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ROCHESTER, MINN.

The state of pregnancy demands increased secretion of the thyroid gland. If the gland is normal and the supply of iodine in the body is adequate, this increase of thyroid secretion will be sufficient.[1] C. H. Mayo and H. S. Plummer [2] stated:

> A supply of iodine inadequate for the proper functioning of the thyroid gland, followed by a subnormal delivery of thyroxine to the tissues, produces hypothyroidism; consequent elevation of intensity of thyroid stimulation causes diffuse hypertrophy of the thyroid gland; the secretory processes are altered; the diffuse hypertrophy disappears; colloid is stored in excess of the normal, and diffuse colloid goiter is the result. In many cases the sustained stimulation of the thyroid gland, in conjunction with unknown factors, causes the development of new tissue, adenomatous goiter. . . . The enlargement of the thyroid gland in pregnancy, whether of adenomatous tissue or of the entire gland from the storage of colloid, is evidence of response of a functionally injured gland to stimuli originating in an increased rate of exhaustion of thyroxine in the body.

Gardiner-Hill [3] called attention to Tait's observation, in 1875, of the steplike enlargement of simple goiter in successive multiple pregnancies and also showed that this obtained in the majority of twenty-six cases of simple goiter coming under his observation. Von Graff [4] noted marked increase in simple goiter in 38.5 per cent of pregnant women coming under his observation. Dock and Lisser [5] called attention to the increase in size of simple goiter during pregnancy, followed by its rapid decrease after confinement. Patients with colloid goiter who do not have hypothyroidism apparently can be carried through pregnancy and confinement without unusual difficulty and give birth to normal children; if the mother is definitely in a hypothyroid state, however, miscarriage is prone to occur. In some cases, women with colloid or adenomatous goiter, especially in certain regions where goiter is endemic, may give birth to infants with definite colloid goiter or frank cretinism.

In accordance with the improvement noted by Marine and Kimball in cases of adolescent goiter, following treatment with iodine, Davis [6] and others stated that the use of small doses of iodine taken throughout pregnancy will prevent further enlargement of colloid goiter. In many cases, following the use of iodine the gland will diminish in size and children born to these mothers will not have the thyroid disturbance which may occur in regions where colloid goiter is endemic. Litzenberg and Carey [7] observed that certain women with

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*From the Section on Obstetrics and the Division of Medicine, the Mayo Clinic.

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1. Sandiford, Irene; and Wheeler, Theodora: Basal Metabolism Before, During and After Pregnancy, J. Biol. Chem. **62:** 329-352 (Dec.) 1924.
2. Mayo, C. H., and Plummer, H. S.: The Thyroid Gland, St. Louis, C. V. Mosby Company, 1925.
3. Gardiner-Hill, H.: Pregnancy Complicating Simple Goiter and Graves's Disease, Lancet **1:** 120-124 (Jan. 19) 1929.
4. von Graff, H., quoted by Gardiner-Hill (footnote 3).
5. Dock, George; and Lisser, H.: Disease of the Thyroid Gland, in Osler, William; and McCrae, Thomas: Modern Medicine, Philadelphia, Lea & Febiger **5:** 339, 1927.
6. Davis, E. P.: Hyperthyroidism in Pregnancy, Progrès méd. **3:** 31-33 (Sept.) 1923.
7. Litzenberg, J. C., and Carey, J. B.: Relation of Basal Metabolism to Gestation, Am. J. Obst. & Gynec. **17:** 550-552 (April) 1929.

hypothyroidism, who had had several miscarriages, had carried safely through full term pregnancies, following the use of sufficient thyroid extract. It must be remembered that, in many cases in which colloid goiter develops, adenomatous nodules may also develop in the thyroid gland and that these nodules tend to enlarge after persons reach adult life; in many cases they may be present and not noticeable. Observations seem to indicate that the administration of preparations of iodine may cause the development of hyperthyroidism in cases of adenomatous goiter, so that preparations of iodine must be used carefully in adult life.

In line with the observations of Döderlein,[8] showing the results of the experimental production of hyperthyroidism in pregnant animals, it has been shown that hyperthyroidism, whether due to adenomatous goiter with hyperthyroidism or to exophthalmic goiter, results in relative sterility, estimated by Gardiner-Hill to be about 50 per cent, and by Mussey, Plummer and Boothby [9] to be about 25 per cent, of normal fertility. Seitz,[10] Crotti [11] and Gardiner-Hill agree that exophthalmic goiter ("Graves disease") is a serious complication of pregnancy. Seitz, in 1913, reported that 40 per cent of 112 patients, representing his own cases and those reviewed from the literature, were not affected by pregnancy and that 60 per cent were distinctly worse; 7 of the patients died, 5 had abortion and 11 had premature labor. Seventeen women with hyperthyroidism were observed by Gardiner-Hill through thirty-one pregnancies. Only ten pregnancies were completed normally; there were nine miscarriages, eight premature births, two stillbirths, and two patients were still pregnant at the time of the observation. It was noted that Mussey, Plummer and Boothby reported one group of thirty-two cases of exophthalmic goiter and another group of ten cases of adenomatous goiter with hyperthyroidism, in practically all of which thyroidectomy was performed, or compound solution of iodine was given, or both measures were carried out. In the group of thirty-two patients with exophthalmic goiter, twenty-three were delivered normally at full term and all but two of the babies were alive at birth; of these two, one was stillborn and the fate of the other was not learned. Two of the patients had abortion; two were delivered prematurely; two were pregnant at the time of the observation, and three were not traced. Of the ten women who had adenomatous goiter with hyperthyroidism and who became pregnant, nine were delivered of normal babies and one baby was stillborn following difficult labor. None of the mothers died during pregnancy; one mother contracted influenza and died during delivery. Hyman and Kessel,[12] who studied a series of twenty patients with exophthalmic goiter, reported that nine patients had twelve children, all normal but one, which was stillborn.

It would seem that the discrepancy which exists between the reports of Hyman and Kessel, and Mussey, Plummer and Boothby, and those of Seitz and Gardiner-Hill is probably due to the favorable results obtained by the use of iodine and partial thyroidectomy in the former groups. There is a difference also in the results of pregnancy in these investigations. Hyman and Kessel, and Mussey, Plummer and Boothby found that they were well up to the average. Gardiner-Hill's results, on the other hand, agree more closely with earlier results of Seitz. His statistics were obtained from cases of his own, from the literature and from circular letters, and it is probable that they refer to a period before the extensive use of iodine and surgical operation in the treatment of exophthalmic goiter. This is also true of many of Gardiner-Hill's cases and may therefore account for the variation. Falls [13] reported thirteen mild cases of hyperthyroidism in pregnancy and five cases of pregnancy with typical exophthalmic goiter. One patient passed a "blood mole" following partial thyroidectomy. Three patients delivered four well developed babies, including one set of twins; one of the twins died of convulsions, and necropsy revealed numerous small hemorrhages of the brain. One of the five patients at the time of the report had not been delivered. Falls deduced that patients with hyperthyroidism may be carried to term or at least to viability of the child by rest in bed and the administration of compound solution of iodine, thus reducing fetal mortality.

Twenty-nine cases of exophthalmic goiter and twelve of adenomatous goiter with hyperthyroidism which were associated with pregnancy were observed in the Mayo Clinic between January, 1923, and January, 1930. In this period, compound solution of iodine had come into use in addition to partial thyroidectomy in the treatment of exophthalmic goiter. Twelve of the twenty-nine cases of exophthalmic goiter and three of the cases of adenomatous goiter with hyperthyroidism were included in a previous report.[9] The onset of symptoms occurred during pregnancy in four of the twenty-nine cases. In three cases mild symptoms recurred after partial thyroidectomy performed prior to pregnancy. Symptoms developed during pregnancy in two of the twelve cases of adenomatous goiter with hyperthyroidism, and in three cases the onset was attributed to a previous pregnancy. The symptoms in five (17 per cent) of the cases of exophthalmic goiter and in six (50 per cent) of the cases of adenomatous goiter with hyperthyroidism were aggravated during pregnancy prior to the inception of treatment. In one case of exophthalmic goiter, spontaneous improvement of symptoms occurred during pregnancy. In twenty-two of the twenty-nine cases of exophthalmic goiter, partial thyroidectomy was performed during pregnancy. In all but two of these twenty-two cases of exophthalmic goiter, compound solution of iodine was given. In these two cases, treatment was given before iodine was used as a routine in cases of exophthalmic goiter prior to partial thyroidectomy. In the remaining seven cases of exophthalmic goiter the patients were carried through pregnancy on compound solution of iodine. In three of these cases the exophthalmic goiter had recurred; in three cases mild symptoms appeared to be controlled by iodine after delivery, and in one case partial thyroidectomy was necessary about a month after delivery. In eleven of the twelve cases of adenomatous goiter with hyperthyroidism, operative treatment was advised. In two cases, operation was refused, and in nine cases partial thyroidectomy was performed. One ptaient with mild symptoms was carried through pregnancy on medical treatment without the use of iodine.

8. Döderlein, Gustav: Experimenteller Hyperthyreoidismus und seine Wirkung auf Fortpflanzung und Nachkommenschaft, Arch. f. Gynäk. **133**: 680-719, 1928.

9. Mussey, R. D.; Plummer, W. A., and Boothby, W. M.: Pregnancy Complicating Exophthalmic Goiter and Adenomatous Goiter with Hyperthyroidism, J. A. M. A. **87**: 1009-1012 (Sept. 25) 1926.

10. Seitz, L.: Die Störungen der inneren Sekretion in ihren Beziehungen zu Schwangerschaft, Geburt und Wochenbett, Verhandl. d. deutsch. Gesellsch. f. Gynäk. **15**: 213-475, 1913.

11. Crotti, André: Thyroid and Thymus, Philadelphia, Lea & Febiger, 1922.

12. Hyman, H. T., and Kessel, Leo: Studies of Exophthalmic Goiter and the Involuntary Nervous System: XIV. Relationship to Sex Life of the Female, J. A. M. A. **88**: 2032-2034 (June 25) 1927.

13. Falls, F. H.: Hyperthyroidism Complicating Pregnancy, Am. J. Obst. & Gynec. **17**: 536-549 (April) 1929.

Thirty-eight of the forty-one cases, including twenty-eight of the twenty-nine cases of exophthalmic goiter and ten of the twelve cases of adenomatous goiter with hyperthyroidism, were traced; all of the thirty-eight patients, except one unmarried woman, reported the outcome of pregnancy. One patient with exophthalmic goiter, who was dismissed in a satisfactory condition following treatment with iodine and partial thyroidectomy, failed to leave a permanent address, and two patients with adenomatous goiter and hyperthyroidism, who refused operation, did not respond to inquiries. All the patients reported relief or improvement of symptoms. Miscarriages were not reported in either group. Including one mother who was delivered of a premature living baby, thirty-seven mothers delivered thirty-six normal living babies (including one set of twins). One stillbirth was reported following difficult forceps delivery. The physician of one mother reported that labor was induced because of uremic poisoning; the mother passed through labor safely; the baby could not retain food, was operated on for pyloric stenosis, and died. Maternal deaths were not reported during pregnancy or as a result of confinement. One mother was found dead, apparently from suicide, six weeks post partum.

The development of colloid goiter, or simple goiter, during pregnancy may affect the future health of the mother but does not affect the normal progress of the pregnancy or the fetus, unless the condition results in a sufficient degree of hypothyroidism to cause miscarriage or the development of colloid goiter or cretinism in the fetus. It is apparent that the use of small doses of iodine is of value in the treatment of colloid goiter during pregnancy. Hypothyroidism may be treated satisfactorily by thyroid extract under careful observation. Adenomatous goiter, uncomplicated by hyperthyroidism, rarely needs treatment during pregnancy, although both adenomatous and colloid goiter may produce sufficient venous or tracheal pressure to necessitate partial thyroidectomy.

Evidence indicates that hyperthyroidism resulting from adenomatous goiter is not satisfactorily controlled by iodine and that it is safer to remove the adenomatous tissue if this condition is present. The use of compound solution of iodine in doses of 10 drops three times a day, in cases of exophthalmic goiter, should be followed by distinct improvement and definitely lowered basal metabolic rate within two weeks. In the occasional case of exophthalmic goiter, within two weeks after the use of iodine, a remission may follow which is complete or nearly complete, with the basal metabolic rate approximating normal or within normal limits. In certain cases of such rapid and marked remission of the disease, the patient may be carried successfully through pregnancy by the administration of iodine, without resort to thyroidectomy. Patients must be observed carefully, however, and determinations of basal metabolic rate must be made occasionally, as recrudescence of the disease often occurs in spite of the continued use of iodine. In the medical treatment of exophthalmic goiter in which there is marked response to iodine, the attending physician may acquire a false sense of security, which results in operation being deferred to a less favorable period in pregnancy or to a time when iodine may fail to give as complete protection against postoperative reaction. Except in certain cases in the later months of pregnancy, partial thyroidectomy should be performed without delay if the exophthalmic goiter does not show complete or nearly complete remission within two weeks after the institution of treatment with iodine; delay may be followed by irreparable injury to vital organs. There may be exceptions to this rule in cases in which complicating conditions other than normal pregnancy exist. In cases of exophthalmic goiter and of adenomatous goiter with hyperthyroidism in which operation is or is not performed, aside from the judicious use of iodine the treatment is the same as that usually given to women during pregnancy and confinement. When the strength of the patient is diminished or the heart is injured as a result of the severity of the hyperthyroidism, it may be necessary to shorten labor by forceps or version or, rarely, by cesarean section.

Whereas, formerly, interruption of pregnancy was usually advised in severe cases of hyperthyroidism complicating pregnancy, and whereas miscarriages were prone to occur spontaneously if treatment was not given, it has been demonstrated that the operation of partial thyroidectomy in cases of adenomatous goiter with hyperthyroidism and, since 1922, the use of compound solution of iodine internally in cases of exophthalmic goiter, followed by partial thyroidectomy when this procedure is indicated, enable the pregnant woman to carry through pregnancy with reasonable expectancy of health and of normal living offspring.

ABSTRACT OF DISCUSSION

DR. F. H. FALLS, Chicago: Pregnant women frequently give evidence of thyrotoxicosis who are normal in this respect when they are not pregnant. The thyrotoxicosis usually disappears as soon as the pregnancy is over. Occasionally it persists and requires operation. In the early statistics on thyrotoxicosis in pregnancy treated surgically, as quoted by the authors today and others, abortion or premature labor occurred not infrequently following the operation. Because of this increased fetal mortality under these circumstances, my associates and I decided to carry through pregnancy a group of women showing definite evidence of exophthalmic goiter and toxic adenoma, on medical management. We were able to do this with a lessened fetal mortality and no maternal mortality. These women showed definite evidence of serious thyrotoxicosis. We elected to carry them through pregnancy on compound solution of iodine and bed rest. We were told by the surgeons that the improvement which occurred with the use of the iodine solution would be short lived and that almost surely the patient's symptoms would recur after the improvement. The favorable time for operation would then have passed by and the surgeon would be placed in a difficult position because of the fact that he did not have the compound solution of iodine to prepare the patient preoperatively. We did not note the serious recrudescence of symptoms that had been predicted. I wish to emphasize a point which the authors mentioned; namely, the fact that one of the patients committed suicide some months after the pregnancy. I have noted a marked nervous reaction in these women who have had thyroidectomies. One patient became pregnant, was extremely nervous throughout the pregnancy, developed a serious psychosis after the pregnancy, and committed suicide. I have seen two other thyroidectomized patients who have had marked psychoses after their pregnancies. I think these women would be helped if, following their delivery, they were not asked to assume the responsibility of the baby. We wean the babies, therefore, and take the responsibility for their care off these women as soon as they have been delivered.

DR. FREDERICK S. WETHERELL, Syracuse, N. Y.: It is well known that simple hypertrophy of the thyroid plus a mild hyperplasia during an infection may be treated with iodine, and that after the cessation of the infection the gland again proceeds to function normally. This sort of treatment, however, demands intelligent supervision on the part of the physician. A condition of continuing toxicity despite treatment, or a recurring one after cessation of treatment, must be recognized, and surgery, in the light of present-day knowledge, offers the best chance for relief. It is true that both obstetricians

and surgeons have been somewhat averse to putting a pregnant woman to the strain of an operative procedure, but experience has shown definitely that this fear has been without foundation as applied to thyroidectomy. My first experience happened to be with a patient with exophthalmic goiter. She was handled as any other case of thyroid toxicity would have been, and her postoperative course was uneventful. It was this case, along with the experience of others, which convinced me of the safety of thyroidectomy in pregnancy, and since then I have operated on four other patients, all without untoward effects. Because of the uncertainty of the effects of continued use of iodine in hyperthyroidism, it seems that thyroidectomy offers the best hope for the future of both mother and child. Since the toxicity practically always manifests itself in the early months of pregnancy, it should seldom be necessary to make a decision as to the advisability of operation after the fifth month. In other words, the physician who assumes the responsibility of conducting a woman through her pregnancy must be on the alert for symptoms of hyperthyroidism, and he should realize that operative intervention in competent hands offers a lower incidence of morbidity, and apparently also of mortality, of both mother and child or either one alone, than does so-called conservative medical treatment.

DR. FRANK H. LAHEY, Boston: When it becomes necessary to perform an operation, particularly under general anesthesia, many patients with hyperthyroidism go into acute delirium and acute intoxication, and a crisis occurs in their hyperthyroidism. I feel, therefore, that these patients in pregnancy should not be permitted to get to the end-stage of their condition when an acute problem may arise. I think that probably pregnancy with the possibility of a general anesthetic, the possibility of a prolonged labor, and the possibility of operative manipulation may be a very similar situation to that of appendectomy, cholecystectomy, or the various general surgical procedures which produce such a high mortality in patients with hyperthyroidism who require major surgical measures and a general anesthetic. Therefore, our attitude regarding these patients is that they should be submitted to early thyroidectomy. We have had sixteen pregnant women with exophthalmic goiter on whom we performed subtotal thyroidectomy. None died, but one had a miscarriage twelve days after operation after a 200-mile drive home. I do not believe the risk to the mother and baby in these cases is as great with early operation as it would be if the operation was delayed until late, when the condition may become acute and the risk of the operation is much higher. I believe that our attitude concerning these cases is that we should operate as early as possible in the pregnancy, and that we can expect just as good results as relates to mortality and the recovery and the diminution in symptoms in the pregnant woman as in the nonpregnant woman.

DR. CARL HENRY DAVIS, Milwaukee: The discussion thus far has revolved about a definite class of patients, and it has been demonstrated that it is possible to do a thyroidectomy during pregnancy without terminating the pregnancy. I am quite in accord with the speakers that termination of pregnancy because of a thyroid disturbance is not justified. I believe, though, that a sharp distinction should be made between the patients who have had evidence of thyroid disease with evidence of toxicity from time to time before they became pregnant and those who develop their first signs of toxicity during the period of pregnancy. It has been demonstrated frequently that, with the extra demands on the thyroid in pregnancy, patients may have evidence of a toxicity, and yet following delivery, if they are given small doses of iodine, these will clear up entirely and the patients go on for years without any further disturbance. Most of the patients that Dr. Lahey sees, and the group whose case histories have been reported by Drs. Mussey and Plummer, have had evidence of toxicity before the pregnancy. Such patients become pregnant at a time when there is little disturbance. I quite agree with the speakers that many of the patients should have a thyroidectomy. However, we must always consider in a different class the other patients who show evidence of trouble for the first time during pregnancy. For these, medical treatment should be attempted. A certain number of patients within a relatively few months after delivery will show evidence of exophthalmic goiter for the first time. It is my belief that those cases should be treated medically, because nearly all, if given sufficient rest and adequate iodine, will clear up within a relatively few months and then may pass over into a stage of hyperthyroidism. I should like, therefore, to second the statement of Dr. Falls that surgery is not necessary for all patients who show signs of toxicity during the period of pregnancy or shortly thereafter.

DR. R. D. MUSSEY, Rochester, Minn.: I should like to emphasize a few points that were not brought out in the presentation of the paper. In untreated hyperthyroidism, pregnancy is a serious complication. Experience has shown, however, that in most cases the disease responds to treatment as promptly when patients are pregnant as when they are not. In the Mayo Clinic, these patients are treated practically the same as if they were not pregnant. About a sixth of the patients with exophthalmic goiter and half of those with adenomatous goiter with hyperthyroidism became worse during pregnancy. Most of these patients became pregnant while in the hyperthyroid state. Probably they represent a group of more severely sick patients than those which Dr. Falls and Dr. Davis have mentioned. As is well known, the rate of metabolism is increased during pregnancy, running up in the latter months. It is quite possible that there are disturbances in glandular activity and in metabolism which represent oversecretion of the thyroid and do not represent true hyperthyroidism. We have been able to observe a considerable number of these patients, and none of them had myxedema following the operation of partial thyroidectomy. Reports were received from all the patients listed on the chart, and all were free from myxedema.

MASSIVE DOSAGE OF LIVER EXTRACT IN PERNICIOUS ANEMIA*

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Riddle and Sturgis [1] have shown that the administration of single massive doses of liver extract in cases of pernicious anemia induced a reticulocyte response and some clinical improvement. Four cases treated in this manner were included in their study. Three of their patients received thirty vials of Liver Extract No. 343 [2] and the fourth received fifteen vials of the same extract. Connery and Goldwater [3] more recently have reported an additional series of four cases treated with large doses of liver extract. Three patients in the series were given a mammalian liver extract and the fourth an extract of fish liver.[4]

The results reported in the aforementioned studies suggested that this mode of administration might be advantageous in overcoming certain difficulties that frequently arise in the course of treatment of patients with pernicious anemia. Not infrequently a peculiar mental state makes the regular daily administration of adequate amounts of liver extract extremely difficult. Obviously, what holds true of liver extract may also be said to apply to the administration of whole liver. If the condition of the patient is such that tube feeding

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1. Riddle, M. C., and Sturgis, C. C.: The Effect of Single Massive Doses of Liver Extract on Patients with Pernicious Anemia, Am. J. M. Sc. **180**: 1 (July) 1930.
2. New and Nonofficial Remedies, 1931, p. 237.
3. Connery, J. E., and Goldwater, L. J.: Studies on Patients with Pernicious Anemia Treated with Massive Doses of Liver Extract, Am. J. M. Sc. **181**: 609 (May) 1931.
4. The mammalian liver extract was that prepared by the Lederle Laboratories (New and Nonofficial Remedies, THE JOURNAL, July 18, p. 179). One vial represents the extract derived from 100 Gm. of mammalian liver. The fish liver extract, Marine Liver Extract-White (New and Nonofficial Remedies, THE JOURNAL, February 21, p. 613), is made by the White Laboratories of Newark, N. J.

must be employed or that death may occur before the beneficial effects of the administration of daily doses become manifest, the use of a single massive dose would seem to be the ideal mode of giving the extract. In hospital nursing, with divided responsibilities, it is not an uncommon occurrence to find that the patient does not receive the extract regularly or in the dosage

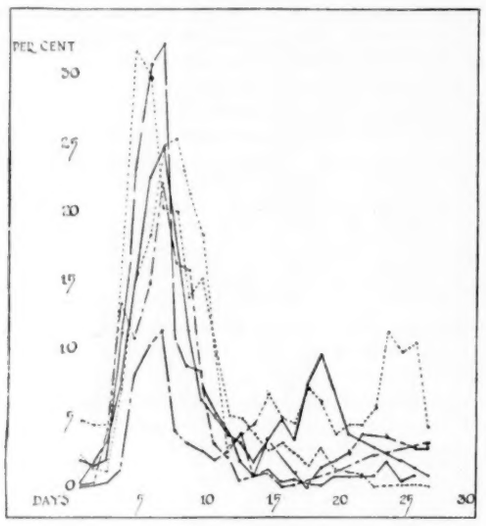


Chart 1.—Reticulocyte curves of all six patients. The reticulocytes are indicated in percentages and the time in days. All curves begin on the day when the extract was given (0 day).

TABLE 1.—*Effect on Reticulocytes*

Patient	Extract Amount Given	Days to Beginning Reticulocyte Rise	Days to Peak	Height of Peak	Estimated Reticulocyte Concentration	Calculated Reticulocyte Concentration
1	30 vials	2	6	24.8%	0.43	0.47
2	50 vials	3	7	26.0%	0.40	0.49
3	48 vials	2	6	22.3%	0.52	0.37
4	50 vials	3	4	32.0%	0.37	0.57
5	30 vials	3	6	32.1%	0.37	0.57
6	50 vials	4	6	12.0%	0.20	0.43

prescribed, or that the patient takes only part of the dose given. Here again it would seem that massive dosage offers a solution to this phase of the problem.

A further consideration is the possibility that in certain cases the total amount of extract required to raise the red cells to a given level may be less when a single massive dose is given than when daily doses are employed.

With these possibilities in mind, it was deemed advisable to carry out further investigation of the use of massive doses of liver extract.

MATERIALS AND METHODS

The cases reported in this study were ward cases in which the diagnosis of pernicious anemia had been made. Two of the patients were admitted in their second relapse, while the remaining four were in their first relapse. Three of the patients were severely, but not critically, ill and one of these was extremely uncooperative in accepting treatment. The other three were practically moribund. All the patients showed some degree of neurologic involvement, but in none was there evidence of advanced subacute combined sclerosis.

Daily reticulocyte determinations were made. Frequent determinations were made of the red cells, hemoglobin, white cells and differential formulas. In several cases, following a period of overnight fasting, determinations of the blood sugar content were made at half hour intervals during a period of two hours following the administration of the liver extract. On these patients, blood pressure readings were taken at frequent intervals during the same period. Patient 1 received thirty vials of liver extract (Lederle) dissolved in buttermilk, which she drank. Patients 2 and 6 each received fifty vials dissolved in water through a Rehfuss tube which had been passed into the stomach. Patient 3 received forty-eight vials and patient 5 received thirty vials by the same method. In case 4 it was necessary to employ a gastric lavage tube, as the patient was too weak to cooperate for voluntary passage of the Rehfuss tube. He was given fifty vials of extract. In cases 3, 4 and 5 there was no vomiting following the administration of the dose. Patients 2 and 6 vomited a mixture of extract, gastric juice and saliva about one hour after receiving the extract. In case 1, vomiting occurred about fifteen minutes after the patient had finished drinking the liver extract and buttermilk mixture.

None of the patients included in this study received liver, kidney or stomach in any form during the period of observation covered by this study.

RESULTS AND COMMENT

Effect on the Reticulocytes.—As will be seen in table 1, the beginning reticulocyte rise occurred on the second day in two cases (1 and 3), on the third day in three cases (2, 4 and 5) and on the fourth day in one case (6). As reticulocyte determinations were made at twenty-four hour intervals, a reticulocyte response charted as occurring on the second day means that the response actualy occurred at some time between twenty-four and forty-eight hours. Similarly, beginning

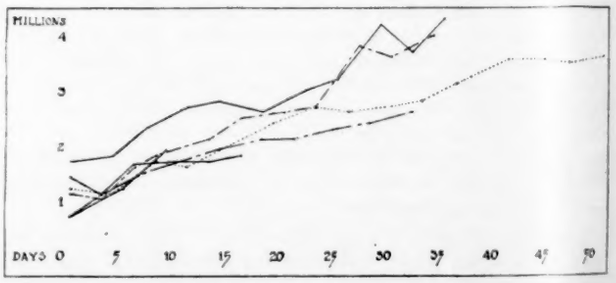


Chart 2.—Curves of the red cells in all cases to the time of maximum increase from a single dose. The red cells are shown in millions and the time in days.

TABLE 2.—*Effect on Erythrocytes*

Patient	Initial Level of Red Blood Cells	Maximum Following Single Dose	Number of Days to Maximum	Increase per Vial
1.....	1.3 million	3.7 million	51	0.080
2.....	1.2 million	4.1 million	34	0.058
3.....	1.8 million	4.4 million	35	0.050
4.....	0.8 million	2.7 million	32	0.038
5.....	0.8 million	2.0 million	9	0.040
6.....	1.5 million	1.9 million	16	0.008

responses noted as occurring on the third and fourth days actually took place between forty-eight and seventy-two, and seventy-two and ninety-six hours, respectively. The peak of the reticulocytes occurred in one case (4) on the fourth day, in four cases (1, 3, 5 and 6) on the sixth day and in one case (2) on the seventh day. The magnitude of the reticulocyte peak was satisfactory in all the patients so treated

excepting patient 6, in whose case the administration of a dose of fifty vials of liver extract was followed by a peak of only 12 per cent. Agreement between the estimated and calculated reticulocyte concentration [5] was not satisfactory in cases 4, 5 and 6. Probable explanations for the poor responses were found in cases 4 and 6. In the former a purulent maxillary sinusitis and several abscessed teeth were discovered, while in the latter an acute infection of the upper respiratory tract and several abscessed teeth were present. Careful search failed to reveal any explanation for the poor result in case 5. Chart 1 shows all the reticulocyte curves during the period of increased peripheral reticulocyte activity.

Effect on Red Cells, Hemoglobin and White Cells.—Table 2 shows the level of the red cells at the time of administration of the single massive doses of liver extract, the highest level reached by the red cells following this treatment, the number of days during which the increase occurred, and the increase in red cells per vial of extract. Chart 2 shows the curves of the red cells in graphic form. It will be noted that in

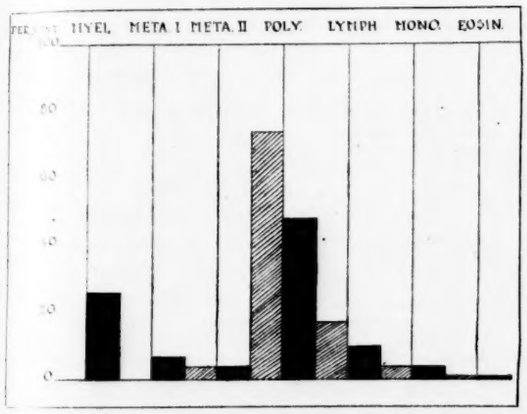


Chart 3.—Hemogram showing differential formula before and during the period of increased peripheral reticulocyte activity (shift to the left): shaded areas, before; solid areas, after.

two cases (2 and 3) the red cells reached a level of 4 million plus. In case 1, the level attained was just under 4 million. The greatest increase in red cells occurred in cases 1, 2 and 3. It was in these cases that a satisfactory agreement was observed between the estimated and calculated reticulocyte concentration. In cases 4, 5 and 6, the agreement between the estimated and calculated reticulocyte concentration was not satisfactory. These cases showed the slightest increase in red cells. The conditions responsible for the lack of agreement between estimated and calculated reticulocyte concentration may also serve to explain the unsatisfactory increase in red cells.

In general, it was observed that the qualitative changes in the red cells decreased as the number of the red cells increased. In all the cases the rise in the curves of red cells was roughly paralleled by a rise in the curves of the hemoglobin. As the red cells approached normal quantitative values, the increase in hemoglobin lagged, so that the color index dropped to below unity.

In some of the cases, during the phase of greatest increased peripheral reticulocyte activity, the "hemogram" showed a "shift to the left" [5] (chart 3).

5. Minot, G. R.; Cohn, E. J.; Murphy, W. P., and Lawson, H. A.: The Treatment of Pernicious Anemia with Liver Extract; Effects upon the Immature and Mature Red Blood Cells, Am. J. M. Sc. **175**: 599 (May) 1928.

Clinical Effects.—Subjective and, to a lesser degree, objective improvement was noted even before the peak of the reticulocyte response had been reached. In general, the state of clinical remission became more complete the nearer the red cells approached normal values. As compared with a similar group of cases treated with adequate amounts of whole liver or of

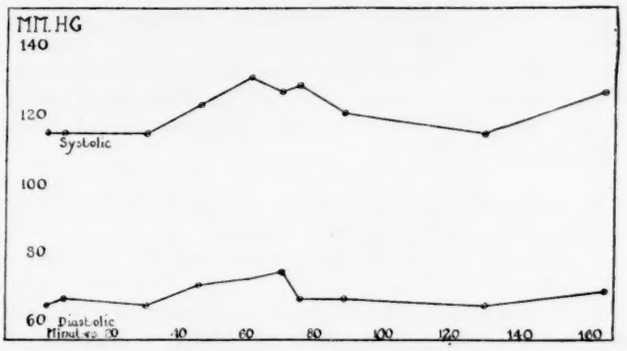


Chart 4.—Curves of systolic and diastolic blood pressures in a representative case. The blood pressure is indicated in millimeters of mercury and the time in minutes. The extract was given at 0 minute.

a potent liver fraction in daily doses, the results were entirely similar except that the beginning improvement probably became manifest slightly earlier in the group treated with massive doses. As has been previously mentioned, none of the patients included in this study showed well established subacute combined sclerosis.

Improvement in the neurologic status following single massive dosage treatment was not different from that seen in a similar group with comparable degree of nervous system involvement treated with daily doses.

Vomiting or diarrhea, and sometimes both these conditions, have previously been noted as occurring in patients treated with single or repeated large doses of liver extract.[6] In the series reported here, vomiting occurred in three cases (1, 2 and 6). Transient diarrhea was noted in case 6. The time of onset, the duration and severity of the gastro-intestinal upset and the amount vomited bore no relation to the amount of extract given, to the original level of the red cells, to the height of the reticulocyte peaks or to the level reached by the red cells following the single massive dose. As described previously under "method," fre-

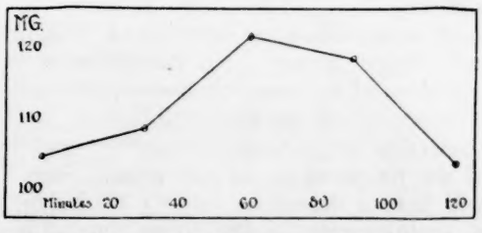


Chart 5.—Blood sugar curve in the same patient whose blood pressure curves are given in chart 4. The blood sugar is indicated in milligrams per hundred cubic centimeters of blood (Folin-Wu), and the time in minutes. The extract was given at 0 minute.

quent readings of the systolic and diastolic blood pressures and quantitative blood sugar determinations were made on several patients. Charts 3 and 4 are typical for all the patients so studied. From these results it is apparent that the vomiting and diarrhea could not be explained by any striking change in the blood pressure or blood sugar levels.

6. Riddle and Sturges (footnote 1). Connery and Goldwater (footnote 2).

The clinical improvement following single massive dosage therapy was sufficient to carry the moribund patients through the period of emergency and so gain the confidence of the recalcitrant patient that it later became a simple matter to carry on further liver extract administration. In addition, the possibility of irregularity in dosage during the critical period was obviated.

I do not intend to convey the impression that single massive dosage therapy constitutes complete specific treatment. All the patients so treated were subsequently given adequate daily doses of liver extract when it had become apparent that the peak of the curves of the red cells following the single dose had been reached.

SUMMARY

1. Six cases of pernicious anemia were treated with single massive doses of liver extract.

2. Hematologic and clinical improvement followed in all cases.

3. In three patients there was satisfactory agreement between the estimated and the calculated concentration of reticulocytes.

4. There was a satisfactory explanation for the lack of agreement in two of the other three patients.

5. From the initial level of the red cells the maximum increase of erythrocytes could not be predicted.

6. The administration of single massive doses of liver extract was without significant effect on the systolic and diastolic blood pressure and on the blood sugar content.

75 East Fifty-Fifth Street.

PERIODICALS FOR MEDICAL LIBRARIES *

R. L. JENKINS, M.D.

CHICAGO

The selection of periodicals for the medical library is a problem in securing the maximum utility with the available funds. In the case of very large libraries able to cover the entire field of medical periodicals there may be relatively little difficulty in the question of choice. In the case of smaller libraries the problem of selection is crucial. It determines the usefulness of the library. It is easy to expend ample funds without securing a satisfactory library.

This article considers the selection of periodicals for the small clinical library. No consideration is made of the problem of the research library, which is essentially different, or of specialized libraries.

The selection of periodicals may be made on the basis of the judgment of an individual. Such a judgment will have a degree of validity depending on the medical sophistication of the judge, but it is almost certain to have some degree of personal bias from particular interest in one field or relative unfamiliarity with another and for this reason cannot be regarded as entirely satisfactory, for a library is intended for the joint use of a group of individuals, as medical libraries are or should be.

P. L. K. Gross and E. M. Gross [1] devised a method of obtaining what may be regarded as a group judgment by a large number of scientific writers in any given field of investigation by tabulating the number of references to every periodical which appear during a given time in one or more prominent journals of the particular scientific field of inquiry. They have applied this method to the selection of chemical periodicals and Allen [2] has applied it to mathematical periodicals.

PROCEDURE

The material here presented is based on an enumeration of the references appearing in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, the *British Medical Journal* and the *Klinische Wochenschrift*. THE JOURNAL was chosen to represent the periodicals published in the United States and its possessions. The *British Medical Journal* was chosen to represent those published in the British Empire, and the *Klinische Wochenschrift* to represent periodicals published in the German language.

The tabulation was begun with the volumes for the year 1929 but in some cases it was necessary to work back into the year 1928 to obtain adequate references.

TABLE 1.—*Periodicals Referred to Most Frequently in The Journal*

Name of Journal	Per Mille References	Cumulative Total
Journal of the American Medical Association	176	176
Journal of Biological Chemistry	36	213
Archives of Internal Medicine	35	247
American Journal of Diseases of Children	29	276
American Journal of the Medical Sciences	24	300
Annals of Surgery	21	321
American Journal of Physiology	21	342
Lancet	21	363
Surgery, Gynecology and Obstetrics	21	384
British Medical Journal	20	404
Archives of Surgery	19	422
Journal of Experimental Medicine	15	438
Münchener medizinische Wochenschrift	14	451
Proceedings of the Society for Experimental Biology and Medicine	13	464
Klinische Wochenschrift	13	477
New England Journal of Medicine and Surgery	12	489
American Journal of Obstetrics and Gynecology	11	500
Journal of Infectious Diseases	10	510
Medical Clinics of North America	9.8	520
Deutsche medizinische Wochenschrift	9.5	530
Medizinische Klinik	9.1	539
Public Health Reports	9.1	548
Bulletin of the Johns Hopkins Hospital	8.7	557
Journal of Laboratory and Clinical Medicine	8.7	565
Archiv für Gynäkologie	7.4	573
Journal of Immunology	7.0	580

The first step was to tabulate 600 references from each of these journals. The 1,800 references so tabulated were to 305 periodicals. At this point all periodicals not having at least three references appearing among the 1,800 were excluded. There remained 140 periodicals, 50 American, 28 British, 55 in the German language and 7 in other languages.

AN "AMERICAN" SCALE

The list of periodicals being thus limited, a total of 2,427 references were tabulated from THE JOURNAL. The periodicals appearing most frequently are listed in order of frequency in table 1. The second column of this table gives the permillage of the references to each of the journals listed. The third column contains the cumulative total of references to this point. It will be noted that the *Journal of Biological Chemistry* is second only to THE JOURNAL itself in importance, and that the *American Journal of Physiology* stands seventh on the list.

As Allen has pointed out, objection might be made to the use of this tabulation on grounds that it would

* This study was carried out under the auspices of the Social Science Research Committee of the University of Chicago.

1. Gross, P. L. K., and Gross, E. M.: College Libraries and Chemical Education, Science **66**: 385-389, 1927.

2. Allen, E. S.: Periodicals for Mathematicians, Science **70**: 592-594 (Dec. 20) 1929.

tend to intensify any national medical bias or insularity of American physicians. That this objection is valid is evident from the fact that nineteen of the twenty-six periodicals listed are published in the United States. To overcome this difficulty, the references tabulated from the *British Medical Journal* were increased to 1,295 and those from the *Klinische Wochenschrift* to 2,445.

The results of this tabulation are contained in table 2. For instance, 21 per cent of the references from THE JOURNAL were to the *Lancet*, 85.1 per cent of the references from the *British Medical Journal* were to this periodical, and 4.4 per cent of those from the *Klinische Wochenschrift*.

AN "INTERNATIONAL" SCALE

These various proportions having been obtained, the problem arises of reducing them to a single scale. The simplest procedure would be to take a mean of the rating of each periodical by the three journals of tabulation, as was done in eliminating periodicals. Such a procedure would certainly mean an unduly high weighting for the *British Medical Journal* and a resultant distortion of the importance of British periodicals. Any weighting procedure must be more or less arbitrary. After some experimentation, the following was adopted as the most logical that I was able to devise:

German authors are under an identical language handicap in reading British and American periodicals. It seems likely, therefore, that the partition of references from the *Klinische Wochenschrift* to the British and American publications is a rough index of the relative importance of the two groups of periodicals. The actual number of references to American periodicals on the selected list, from the *Klinische Wochenschrift*, is 190, while that to the British is 78. By this criterion, then, the American periodicals are $\frac{190}{78}$, or 2.44 times, as important as the British. Grouping the American and British periodicals together, we may compare the importance of the English language periodicals with the importance of the German language periodicals. The English speaking writers are under a language handicap in reading the German literature, and vice versa. If we are willing to make the assumption that this handicap is equal for the two groups of writers—German language handicap to English-speaking and English language handicap to German speaking writers—then we may expect the ratio of the English references in the German literature to the German references in the English literature to indicate the relative importance of the English and German language periodicals. Strictly speaking this assumption is probably false, but as has already been stated any procedure at this point must be arbitrary. This weighting arrangement is used with full recognition of its arbitrary character in an effort to build an international scale of periodicals of some significance. Of the references tabulated from the *Klinische Wochenschrift*, 19.25 per cent are to English language publications. Nine and five-tenths per cent of the total references from THE JOURNAL and the *British Medical Journal* are to the German literature (9.52 per cent and 9.67 per cent for the two journals, respectively). The weight assigned to the English language periodicals is therefor $\frac{19.25}{9.5}$, or 2.01 times that assigned to the German.

Putting these relations together leads to the conclusion that 47.4 per cent of the references should be to American periodicals, 19.4 per cent to British and 33.2 per cent to German. If now the three journals are so weighted that the total references come out in this relation, the weights are found to be as follows: 0.464 to THE JOURNAL, 0.273 to the *British Medical Journal*, and 0.255 to the *Klinische Wochenschrift*.

TABLE 2.—*Relative Importance of Fifty Leading Medical Journals*

Name of Journal	Per Mille of References: The Journal A.M.A.	British Medical Journal	Klinische Wochenschrift	Weighted Mean	Cumulative Total
Journal of the American Medical Association	176.3	70.7	10.9	107	107
British Medical Journal	19.8	159.0	2.8	52	159
Klinische Wochenschrift	12.8	4.8	127.2	40	199
Lancet	21.0	85.1	4.4	33	232
Münchener medizinische Wochenschrift	13.6	8.8	53.4	22	254
Journal of Biological Chemistry	36.3	8.0	10.5	22	276
Archives of Internal Medicine	34.6	12.0	6.5	22	298
Deutsche medizinische Wochenschrift	9.5	8.8	49.8	20	318
Surgery, Gynecology and Obstetries	20.6	33.7	0.0	19	337
Annals of Surgery	28.8	8.8	2.4	17	371
American Journal of Diseases of Children	21.4	24.1	0.8	17	354
American Journal of the Medical Sciences	23.9	11.2	4.1	16	387
Medizinische Klinik	9.1	11.2	28.0	14	401
American Journal of Physiology	21.0	8.0	6.5	14	415
Biochemische Zeitschrift	4.9	5.6	37.3	13	428
Proceedings of the Royal Society of Medicine	5.4	36.9	4.1	13	441
Archives of Surgery (Chicago)	18.5	8.0	2.0	12	453
Journal of Experimental Medicine	15.2	5.6	6.5	10	463
Wiener klinische Wochenschrift	6.2	1.6	25.5	10	473
Proceedings of the Society for Experimental Biology and Medicine	13.2	8.0	1.2	8.8	482
Deutsches Archiv für klinische Medizin	1.6	4.8	25.1	8.4	490
Zeitschrift für klinische Medizin	5.4	1.6	21.1	8.4	499
Archiv für Gynäkologie	7.4	1.6	16.2	8.1	507
Journal of Physiology	1.6	20.1	8.1	8.1	515
New England Journal of Medicine and Surgery	12.4	7.2	0.0	7.9	523
Zeitschrift für experimentelle Pathologie und Therapie	0.0	0.8	28.8	7.6	530
Archiv für experimentelle Pathologie und Pharmakologie	2.9	0.0	21.1	6.8	537
Journal of Pathology and Bacteriology	3.3	20.1	0.0	6.8	544
Journal of Bone and Joint Surgery	6.6	12.9	0.0	6.6	551
Bulletin of the Johns Hopkins Hospital	8.7	5.6	3.6	6.6	557
American Journal of Obstetrics and Gynecology	10.7	4.0	0.8	6.5	564
Journal of Infectious Diseases	10.3	4.0	2.0	6.4	570
Archives of Dermatology and Syphilology	6.2	8.8	4.0	6.3	576
Biochemical Journal	4.5	9.6	5.7	6.1	582
Zentralblatt für Gynäkologie	3.3	0.8	15.8	5.8	594
Archiv für Dermatologie und Syphilis	0.4	0.0	22.7	6.0	588
Journal of Laboratory and Clinical Medicine	8.7	4.0	1.2	5.6	600
Pflügers Archiv	0.0	0.0	20.3	5.2	605
Medical Clinics of North America	9.9	1.6	0.0	5.2	610
Verhandlungen Deutsche Gesellschaft für innere Medizin	0.8	0.8	16.6	4.8	615
Archiv für klinische Chirurgie	3.3	1.6	10.9	4.8	620
Journal of Immunology	7.0	2.4	3.2	4.8	625
Public Health Reports	9.1	0.8	0.4	4.7	629
British Journal of Surgery	1.2	14.5	0.4	4.5	634
Ergebnisse der inneren Medizin und Kinderheilkunde	0.8	0.0	14.2	4.0	638
Archives of Pediatrics	6.2	3.2	0.8	4.0	642
Zentralblatt für Haut- und Geschlechtskrankheiten	0.0	0.0	15.4	3.9	646
British Journal of Experimental Pathology	0.8	12.9	0.0	3.8	649
Zentralblatt für Bakteriologie	0.0	6.4	8.1	3.7	653
Beitraege zur Klinik der Tuberkulose	0.8	1.6	11.3	3.7	657

The use of these weights gives the weighted mean tabulated in the fourth column of table 2. The figures in this column may be regarded as probably representing a fair estimate of the actual relative international importance of the leading periodicals in the field of medicine. Of course, the three periodicals chosen for tabulations

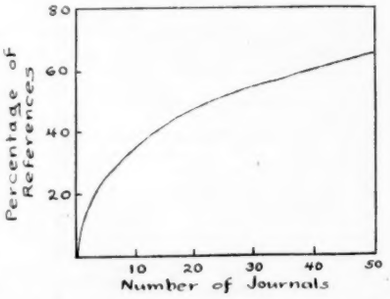
are probably overweighted. Of course, the special requirements of the specialties are but partially reflected in such a tabulation; and, of course, periodicals in other languages than English or German deserve a place they do not receive at all in this list. In spite of these defects, there undoubtedly remains a much more accurate scale of the relative importance of the periodicals than any one individual would be likely to prepare on the basis of his own judgment. Table 2 includes 23 American periodicals, 8 British periodicals and 20 German language periodicals.

Ten periodicals contain 35 per cent of the total references, twenty periodicals contain 48. The total fifty periodicals listed contain 66 of the total references.

The *law of diminishing returns* is clearly illustrated in table 2 and in the chart. If periodicals are wisely chosen for a medical library, the increment in references becomes successively smaller as more periodicals are added.

Another problem must be considered in the question of the purchase of medical periodicals—the choice of the purchase of back files of important periodicals versus the purchase of current or recent numbers of less important periodicals.

It was found that only 7 per cent of the total references were to periodicals dated before 1910, 11 per cent were to periodicals of the 1910-1919 decade, and 82 per cent were to periodicals of the period 1920-1929. There were 7.1 times as many references to periodicals of the last decade as to those of the one preceding it. If one disregards the fact that certain of the periodicals are not 20 years old, in general it may be said that a purchase of the last ten years of an additional current periodical may be expected to be more valuable than the purchase of the files for the decade preceding this of an important periodical, unless the latter has 7.1 more times as many references as the former. By this criterion the second decade back of only four journals at the top of the list would be expected to be more useful than the last decade of the last journal on the list. In the distribution of references, medical writers show much less respect for the past than was revealed in the study of chemical and mathematical periodicals.



Law of diminishing returns as exemplified by increment of references.

SUMMARY AND CONCLUSIONS

The utility of a medical library depends not only on the funds expended for the purchase of books and periodicals but also on the wisdom of the selection.

Table 2, based on the tabulation of more than 6,000 references to periodicals from the medical literature, probably represents a fairly good index of the relative importance of the fifty leading medical periodicals. These fifty periodicals represent two thirds of the citations from a selection from THE JOURNAL, the *British Medical Journal* and the *Klinische Wochenschrift*.

In equipping a medical library on limited funds, it is in general better policy to purchase a wide selection of current or recent numbers of periodicals than more complete files of a more limited number of periodicals.

Clinical Notes, Suggestions, and New Instruments

ACUTE STREPTOCOCCUS PERITONITIS, PLEURITIS, AND EPIDIDYMITIS: REPORT OF A CASE

CHARLES EVERETT HAINES, M.D., NEW ROCHELLE, N. Y.

This illness, and the recovery from it, being so unusual, I give the details, believing them to be of interest.

Nov. 19, 1930, I was called in consultation to see an infant, aged 9 months, who had been ill with intermittent chills and fever for three weeks. Medical assistance had not been invited until a few hours before the consultation.

During the two preceding days there had apparently been severe pain in the abdomen. There had been no vomiting. The child's appetite had been poor. The bowel movements had been normal.

The patient was a well developed and well nourished white boy. He had been born normally at full term and had been breast fed; he had gained satisfactorily and had never before been ill.

On examination, he appeared acutely ill. The abdomen was markedly distended; there were moderate rigidity and apparently considerable tenderness in the right lower quadrant. On rectal examination, tenderness could not be discovered. The left half of the scrotum was red and swollen, and the epididymis was enlarged and very tender. Clinically, the ears, throat, heart and lungs were normal. There was no rigidity of the neck. The temperature was 103.6 F. by rectum, the pulse 145 per minute and respirations 35 per minute. The urine was normal. The white blood count showed 35,500 leukocytes, with 93.5 per cent polymorphonuclears. Roentgenograms of the chest showed no evidence of pneumonia or of fluid in either pleural cavity. A diagnosis was made of acute peritonitis, probably secondary to an acute appendicitis.

A general anesthetic was given and a laparotomy was performed. When the peritoneum was opened, a small quantity of thin, yellowish, odorless pus welled into the wound. The serosa of the intestine was not inflamed. The abdominal organs were normal to palpation. Although the appendix seemed to be normal, it was removed. A focus of infection not being found, the abdominal wound was closed without drainage.

Examination of the appendix revealed marked inflammation of the serosa. A culture of the pus from the peritoneal cavity showed *Streptococcus hemolyticus.*

Eighteen hours after the operation, the patient's temperature rose to 105 F. by rectum and gradually returned to normal on the ninth day after the operation. There was a superficial wound infection which was healing slowly. Otherwise, recovery seemed satisfactory.

The tenth day after the operation, the temperature rose to 101.6 F. by rectum and, on the following day, to 104.2. Clinical examination of the chest revealed fluid in the left pleural cavity. This observation was confirmed by roentgenograms. Sixty cubic centimeters of thin, yellowish, odorless pus was aspirated. A culture of this pus showed *Streptococcus hemolyticus.* The following day the temperature rose to 105.2 F. by rectum; aspiration yielded 25 cc. of pus. The next day, 150 cc. of pus was aspirated. After the third aspiration, the temperature and pulse returned to normal and remained normal.

Clinical examination of the chest two weeks later did not reveal the presence of any fluid. By this time the abdominal wound had practically healed and the epididymis appeared to be normal.

The patient was discharged from the hospital on the twenty-eighth day after the appendectomy. He was gaining in weight, he looked well, his appetite was good, his lungs were normal on physical examination, the abdominal wound was healed and the epididymis was normal.

From the mother's account of the history of the case, together with the clinical and laboratory observations, the conclusion is reached that the baby first had a streptococcus tonsillitis; probably secondary to this came a streptococcus peritonitis; then, an epididymitis and, lastly, a streptococcus pleuritis.

650 Main Street.

MEDICAL EDUCATION IN THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1930-1931 BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

FOREWORD

"The functions of the Council on Medical Education and Hospitals shall be: 1. To investigate conditions of medical education, hospitals and associated subjects and to suggest means and methods by which the same may be improved. 2. To endeavor to further the realization of such suggestions as may be approved by the House of Delegates."

In the Educational Number of THE JOURNAL of last year,[1] the material was divided into three sections; namely, Premedical Education, Medical Education and Hospital Intern Service. This was done in recognition of the fact that the time the student spends in the medical school should properly be considered only as a part of his educational period. In other words, his premedical preparation and the internship following his medical studies were considered to be of considerable, if not of equal, importance. The same plan will be followed in the accompanying presentation. The statistics presented for the academic year 1930-1931 are based on reports received directly from the medical colleges and other reliable sources. The Council acknowledges with thanks the kind cooperation of the officers of the colleges, which has made the compilation of these statistics possible.

PART I. PREMEDICAL EDUCATION

Since 1915 the Council on Medical Education and Hospitals has published in reprint form a list of "Approved Colleges of Arts and Sciences and Junior Colleges" as a guide to prospective medical students and to the deans of the medical colleges in selecting students. In formulating this list and in keeping it revised the Council has depended entirely on the lists published by the following authorized accrediting agencies:

KEY LETTER	AGENCY
A	Association of American Universities.
C	North Central Association of Colleges and Secondary Schools.
M	Association of Colleges and Secondary Schools of the Middle States and Maryland.
N	New England Association of Colleges and Secondary Schools, Member of.
S	Association of Colleges and Secondary Schools of the Southern States.
W	Northwest Association of Secondary and Higher Schools.

The events which led up to the preparation of this list were reviewed in detail in a previous issue.[1] Briefly, it may be stated that the Council recognizes that the classification of colleges of arts and sciences may safely be entrusted to the hands of the educational experts who govern these standardizing agencies, and further that these bodies are believed to be sufficiently free from local, political or sectarian influences to be deemed worthy of the Council's endorsement. The list of colleges and secondary schools approved for premedical training now numbers 608, of which 81 are junior colleges.

Colleges of liberal arts or sciences which have been approved by their district associations, or by the Association of American Universities, are considered as acceptable to the Council on Medical Education and Hospitals. The colleges included in this report have been approved by one or more of the agencies mentioned in the key to authorities. The purpose of this list is to assist the prospective medical student in differentiating between colleges which are reputable and worthy and those which may not be so. Exceptional students from colleges not duly accredited, who may have taken more premedical work than is usually required, are occasionally accepted by medical schools.

Colleges not named in this list are urged to apply for approval to one of the organizations named in the key to authorities.

Junior Colleges.—Credentials of premedical work taken in junior colleges (indicated by an asterisk) must show the completion of at least sixty semester hours in subjects of college grade, including the required credits in physics, chemistry, biology and English. Students presenting such credentials must have completed fifteen units of accredited high school work before taking college courses.

Normal Schools.—Students presenting credentials from normal schools which are organized primarily for the training of teachers may be accepted if such credentials have the certification of the registrar of the state university that the courses completed by the student are the equivalent of the courses accepted from approved colleges and universities.

STATISTICS ON PREMEDICAL EDUCATION

The accompanying statistics relate to the character of the premedical education of students who entered on the study of medicine at the beginning of the last session—in the fall of 1930.[2]

Table 1 shows the qualifications of the freshmen who entered the approved medical schools in the fall of 1930. In order to simplify the table as much as possible, no account has been made of transfers. For instance, if a student attended an unrecognized college of liberal arts and science in his freshman year and transferred for his sophomore work to an approved college, he is listed as having come from an approved college, and vice versa. There were 451 freshmen who had transferred during their premedical work from unapproved to approved schools, as compared with 81 who transferred from approved to unapproved colleges. There were 509 students who had taken all their premedical work in unapproved colleges, a percentage of 7.7. Of these, however, 26 came from colleges of pharmacy and 8 from foreign colleges, which are, of course, unclassified. Thirty-eight students took part of their premedical work in foreign schools; 18 took part of their work in pharmacy schools and 6 in dental schools. Eight students took part of their work in the following special schools: engineering, 2; forestry, 1; agriculture, 1; mines, 1; business, 1; education, 1, and nursing, 1.

There were 146 students who came from schools which had become accredited during their period of attendance, as compared with 36 coming from schools which had been demoted during their attendance,

1. J. A. M. A. 95:487-537 (Aug. 16) 1930.

2. These statistics were collected from the Medical Students Register Reports sent in by the deans of the medical schools, which were checked with the students' personal history blanks made out by the students themselves. These reports serve not only as material for this number but become a part of the permanent file known as the Medical Students Register. When a student is graduated, his record is transferred to the files of the Biographic Department.

TABLE 1.—*Qualifications of Students Who Entered Schools as Freshmen in Session of 1930-1931*

Name of College	Approved Colleges	Unapproved Colleges	Total
University of Alabama School of Medicine	52	1	53
University of Arkansas School of Medicine	55	6	61
University of California Medical School	58	2	60
College of Medical Evangelists	39	77†	116
University of Southern California School of Medicine	53	1	54
Stanford University School of Medicine	51	0	51
University of Colorado School of Medicine	66	1	67
Yale University School of Medicine	44	3	47
Georgetown University School of Medicine	142	24	166
George Washington University School of Medicine	87	2	89
Howard University College of Medicine	56	5	61
Emory University School of Medicine	61	2	63
University of Georgia Medical Department	41	0	41
Loyola University School of Medicine	122	31	153
Northwestern University Medical School	122	6	128
University of Chicago, Graduate School of Medicine of the Division of Biological Sciences	105	2	107
University of Illinois College of Medicine	182	0	182
Indiana University School of Medicine	110	24	134
State University of Iowa College of Medicine	91	6	97
University of Kansas School of Medicine	71	9	80
University of Louisville School of Medicine	84	3	87
Tulane University School of Medicine	127	3	130
Johns Hopkins University School of Medicine	70	0	70
University of Maryland School of Medicine	111	27‡	138
Boston University School of Medicine	56	11	67
Harvard University Medical School	123	2	125
Tufts College Medical School	120	3	123
University of Michigan Medical School	128	6	134
Detroit College of Medicine and Surgery	63	25¶	88
University of Minnesota Medical School	143	10	153
University of Mississippi School of Medicine	32	1	33
University of Missouri School of Medicine	38	2	40
St. Louis University School of Medicine	148	22	170
Washington University School of Medicine	76	2	78
Creighton University School of Medicine	90	14	104
University of Nebraska College of Medicine	81	18	99
Dartmouth Medical School	22	1	23
Albany Medical College	35	1	36
Long Island College of Medicine	115	4	119
University of Buffalo School of Medicine	77	1	78
Cornell University Medical College	59	0	59
Columbia University College of Physicians and Surgeons	113	1	114
New York Homeopathic Med. College and Flower Hosp.	92	15	107
University and Bellevue Hospital Medical School	129	0	129
University of Rochester School of Medicine	46	1	47
Syracuse University College of Medicine	51	1	52
Duke University School of Medicine	50	2	52
University of North Carolina School of Medicine	42	0	42
Wake Forest College School of Medicine	30	0	30
University of North Dakota School of Medicine	32	2	34
University of Cincinnati College of Medicine	88	2	90
Western Reserve University School of Medicine	73	2	75
Ohio State University College of Medicine	99	1	100
University of Oklahoma School of Medicine	52	24	76
University of Oregon Medical School	63	2	65
Hahnemann Medical College and Hosp. of Philadelphia	71	84§	155
Jefferson Medical College of Philadelphia	148	8	156
Temple University School of Medicine	110	1	111
University of Pennsylvania School of Medicine	120	2	122
Woman's Medical College of Pennsylvania	27	6	33
University of Pittsburgh School of Medicine	66	1	67
Medical College of the State of South Carolina	41	0	41
University of South Dakota School of Medicine	27	1	28
University of Tennessee College of Medicine	91	21	112
Meharry Medical College	31	25#	56
Vanderbilt University School of Medicine	47	5	52
Baylor University College of Medicine	104	19	123
University of Texas School of Medicine	95	12	107
University of Utah School of Medicine	36	0	36
University of Vermont College of Medicine	44	0	44
University of Virginia Department of Medicine	63	2	65
Medical College of Virginia	73	15	88
West Virginia University School of Medicine	77	5	82
University of Wisconsin Medical School	122	4	126
Marquette University School of Medicine	71	4	75
Totals	5,830	626	6,456

The agencies issuing lists of approved colleges of arts and sciences and junior colleges, which have been considered reliable by the Council on Medical Education and Hospitals and which are referred to in these statistics as "approved," consist of the five district Associations of Colleges and Secondary Schools and the Association of American Universities.

† This large figure includes Seventh Day Adventist schools not approved by the district Association or the Association of American Universities.

‡ Twenty-five attended or presented degrees from the University of Maryland College of Pharmacy in lieu of premedical work.

¶ This figure represents students from the University of Detroit, which received an approved rating in March, 1931.

§ Admitted students coming from the Hahnemann School of Science, which thus far, has not obtained the approval of the district Association of Colleges and Secondary Schools.

Until in 1929 no satisfactory list of Negro colleges had been prepared by a standardizing agency which could be considered as acceptable by the Council on Medical Education and Hospitals, and the Negro medical schools had no such list to guide them.

which indicates that the greater proportion of colleges of liberal arts and sciences are raising their standards.

Considering the figures in the table itself: A total of 6,456 students entered medical schools as freshmen in the fall of 1930. It is interesting to note that the same total last year was 6,457. This will be referred to in another place. It will be noted that most of the medical schools accepted very few candidates from unapproved colleges; in fact, eleven did not admit any such students. There were 5,830 freshmen from approved colleges (of whom 2,710 held baccalaureate or higher degrees) as compared with 626 from colleges unapproved (9.6 per cent).

TABLE 2.—*Premedical College Work of Freshman Students Session 1930-1931*

	Two Years	Three Years	Four Years	Totals
United States	1,175	1,984	3,245	6,404
U. S. possessions	2	5	8	15
Canada	5	3	6	14
Foreign	9	3	11	23
Totals	1,191	1,995	3,270	6,456

The figures in themselves, however, do not tell the whole story, since it may safely be said that the majority of the students from unrecognized schools presented credits in excess of those required; in fact, 257 had earned baccalaureate or higher degrees. There are explanatory footnotes with the table relating to some of the schools which appear to have a high number of students from unapproved colleges. A few others, however, accepted a large proportion of students from unapproved colleges for which no specific reason can be assigned, except that the list of approved colleges published by the Council on Medical Education and Hospitals had not been consulted.

The freshman students have been classified in table 2 according to their residence and their period of preparation. There were only 15 students from the United States possessions, 14 from Canada and 23 from other foreign countries who entered the first year of medicine in the fall of 1930. A fact not shown in the table but which should be mentioned is that 190 who had three years of preparation had also obtained baccalaureate or higher degrees.

The list of colleges approved for premedical work follows:

TABLE 3.—*Approved Colleges of Arts and Sciences and Junior Colleges*

(Revised to Aug. 15, 1931)

Name of College and Location	*Authority*
ALABAMA	
Alabama College, Montevallo	S
Alabama Polytechnic Institute, Auburn	S
Birmingham Southern College, Birmingham	A-S
Howard College, Birmingham	A-S
Judson College, Marion	S
Marion Institute,* Marion	S
Spring Hill College, Spring Hill	S
University of Alabama, University	A-S
Woman's College of Alabama, Montgomery	S
ARIZONA	
Arizona State Teachers College, Flagstaff	C
Phoenix Junior College,* Phoenix	C
Arizona State Teachers College, Tempe	C
University of Arizona, Tucson	A-C
ARKANSAS	
Arkansas Agricultural and Mechanical College,* Jonesboro	C
Arkansas Agricultural and Mechanical College,* Monticello	C
Arkansas Polytechnic Institute,* Russellville	C
Arkansas State Teachers College, Conway	C
Central College,* Conway	C
College of the Ozarks, Clarksville	C
Hendrix College, Conway	A-C

TABLE 3.—*Approved Colleges of Arts and Sciences and Junior Colleges—Continued*

Name of College and Location	*Authority*
Little Rock Junior College,* Little Rock	C
Ouachita College, Arkadelphia	C
State Agricultural and Mechanical College,* Magnolia	C
University of Arkansas, Fayetteville	A-C
CALIFORNIA	
California Institute of Technology, Pasadena	A
College of the Holy Name, Oakland	W
College of the Pacific, Stockton	A
Dominican College, San Rafael	A
Immaculate Heart College, Hollywood	W
Mills College, Mills College (Oakland)	A
Occidental College, Los Angeles	A
Pomona College, Claremont	A
Stanford University, Stanford University	A
San Diego State Teachers College, San Diego	W
St. Mary's College, St. Mary's College (Oakland)	W
University of California, Berkeley	A
University of Redlands, Redlands	A-W
University of Southern California, Los Angeles	A
Whittier College, Whittier	A
COLORADO	
Colorado Agricultural College, Fort Collins	C
Colorado College, Colorado Springs	A-C
Colorado School of Mines, Golden	C
Colorado State Teachers College, Greeley	C
Loretto Heights College, Loretto	C
Regis College,* Denver	C
University of Colorado, Boulder	A-C
University of Denver, University Park (Denver)	A-C
Western State College of Colorado, Gunnison	C
CONNECTICUT	
Connecticut Agricultural College, Storrs	N
Connecticut College for Women, New London	A
Junior College of Connecticut,* Bridgeport	N
Trinity College, Hartford	A-N
Wesleyan University, Middletown	A-N
Yale University, New Haven	A-N
DELAWARE	
University of Delaware, Newark	A-M
DISTRICT OF COLUMBIA	
American University, Washington	M
Catholic University of America, Washington	A-M
Georgetown University, Washington	A-M
George Washington University, Washington	A-M
Howard University, Washington	M
Trinity College, Washington	A-M
FLORIDA	
Florida State College for Women, Tallahassee	A-S
Rollins College, Winter Park	S
University of Florida, Gainesville	A-S
GEORGIA	
Agnes Scott College, Decatur	A-S
Andrew College,* Cuthbert	S
Brenau College, Gainesville	S
Emory University, Atlanta	A-S
Georgia School of Technology, Atlanta	S
Georgia State College for Women, Milledgeville	S
Georgia State Teachers College, Athens	S
Georgia State Woman's College, Valdosta	S
Junior College of Augusta,* Augusta	S
Mercer University, Macon	S
Shorter College, Rome	S
University of Georgia, Athens	A-S
Wesleyan College, Macon	A-S
HAWAII	
University of Hawaii, Honolulu	A
IDAHO	
College of Idaho, Caldwell	W
Northwest Nazarene College,* Nampa	W
State Normal School, Albion	W
State Normal School, Lewiston	W
Southern Branch, University of Idaho,* Pocatello	W
University of Idaho, Moscow	A-W
ILLINOIS	
Armour Institute of Technology, Chicago	C
Augustana College and Theological Seminary, Rock Island	C
Blackburn College,* Carlinville	C
Bradley Polytechnic Institute, Peoria	C
Carthage College, Carthage	A-C
Central Y. M. C. A. College,* Chicago	C
Crane Junior College,* Chicago	C
De Paul University, Chicago	C
Elmhurst College,* Elmhurst	C
Eureka College, Eureka	A-C
Frances Shimer Junior College,* Mt. Carroll	C
Illinois College, Jacksonville	A-C
Illinois State Normal University (Southern), Carbondale	C
Illinois State Normal University, Normal	C
Illinois State Teachers College (Northern), DeKalb	C
Illinois State Teachers College (Eastern), Charleston	C
Illinois State Teachers College (Western), Macomb	C
Illinois Wesleyan University, Bloomington	A-C
MacMurray College for Women (formerly Illinois Woman's College), Jacksonville	A-C
James Milliken University, Decatur	C
Joliet Junior College,* Joliet	C
Knox College, Galesburg	A-C
Lake Forest College, Lake Forest	A-C
La Salle-Peru-Oglesby Junior College,* La Salle	C
Lewis Institute, Chicago	C
Lincoln College,* Lincoln	C
Loyola University, Chicago	C
McKendree College, Lebanon	C
Monmouth College, Monmouth	A-C
Monticello Seminary,* Godfrey	C
Morton Junior College,* Cicero	C
North Park College,* Chicago	C
North-Central College, Naperville	A-C
Northwestern University, Evanston	A
Rockford College, Rockford	A-C
Rosary College, River Forest	A-C
Shurtleff College, Alton	C
University of Chicago, Chicago	A-C
University of Illinois, Urbana	A-C
Wheaton College, Wheaton	A-C
INDIANA	
Ball State Teachers College, Muncie	C
Butler University, Indianapolis	C
De Pauw University, Greencastle	A-C
Earlham College, Earlham (Richmond)	A-C
Evansville College, Evansville	C
Franklin College, Franklin	A-C
Hanover College, Hanover	C
Indiana State Teachers College, Terre Haute	C
Indiana University, Bloomington	A-C
Purdue University, Lafayette	A-C
Rose Polytechnic Institute, Terre Haute	A-C
St. Mary's College, Notre Dame	C
St. Mary-of-the-Woods College, Saint Mary-of-the-Woods	C
University of Notre Dame, Notre Dame	A-C
Valparaiso University, Valparaiso	C
Wabash College, Crawfordsville	A-C
IOWA	
Clarke College (formerly Mt. St. Joseph College), Dubuque	C
Coe College, Cedar Rapids	A-C
Columbia College, Dubuque	A-C
Cornell College, Mount Vernon	A-C
Drake University, Des Moines	A-C
Graceland College,* Lamoni	C
Grinnell College, Grinnell	A-C
Iowa State College of Agriculture and Mechanical Arts, Ames	A-C
Iowa State Teachers College, Cedar Falls	C
Luther College, Decorah	C
Mason City Junior College,* Mason City	C
Morningside College, Sioux City	A-C
Parsons College, Fairfield	C
Penn College, Oskaloosa	C
Simpson College, Indianola	A-C
St. Ambrose College, Davenport	C
Ottumwa Heights College* (formerly St. Joseph Junior College*) Ottumwa	C
State University of Iowa, Iowa City	A-C
University of Dubuque, Dubuque	C
KANSAS	
Baker University, Baldwin City	A-C
College of Emporia, Emporia	C
Friends University, Wichita	C
Kansas State College of Agriculture and Applied Science, Manhattan	A-C
Kansas State Teachers College of Emporia, Emporia	C
Fort Hays Kansas State College (formerly Kansas State Teachers College), Hays	C
Kansas State Teachers College, Pittsburg	C
Municipal University of Wichita, Wichita	C
Ottawa University, Ottawa	C
St. Benedict's College, Atchison	C
St. Mary's College, St. Mary's	C
Sterling College, Sterling	C
The Saint Mary College,* Leavenworth	C
University of Kansas, Lawrence	A-C
Washburn College, Topeka	A-C
KENTUCKY	
Bethel Woman's College,* Hopkinsville	S
Berea College, Berea	A-S
Centre College, Danville	A-S
Eastern Kentucky State Teachers College, Richmond	S
Georgetown College, Georgetown	S
Morehead State Teachers College, Morehead	S
Murray State Teachers College, Murray	S
Nazareth Junior College,* Nazareth	S
Transylvania University, Lexington	S
University of Kentucky, Lexington	A-S
University of Louisville, Louisville	S
Western Kentucky State Teachers College, Bowling Green	S
LOUISIANA	
Centenary College, Shreveport	S
Louisiana College, Pineville	S
Louisiana Polytechnic Institute, Ruston	S
Louisiana State University, Baton Rouge	A-S
Loyola University, New Orleans	S
State Normal College, Natchitoches	S
Southwestern Louisiana Institute, Lafayette	S
Tulane University of Louisiana, including H. Sophie Newcomb Memorial College, New Orleans	A-S
MAINE	
Bates College, Lewiston	A-N
Bowdoin College, Brunswick	A-N
Colby College, Waterville	A-N
University of Maine, Orono	A-N

TABLE 3.—*Approved Colleges of Arts and Sciences and Junior Colleges—Continued*

Name of College and Location	*Authority*
MARYLAND	
College of Notre Dame of Maryland, Baltimore	M
Goucher College, Baltimore	A-M
Hood College, Frederick	M
Johns Hopkins University, Baltimore	A-M
Morgan College, Baltimore	M
Mount St. Mary's College, Emmitsburg	M
St. John's College, Annapolis	M
St. Joseph's College, Emmitsburg	M
The United States Naval Academy, Annapolis	A
University of Maryland, College Park	A-M
Washington College, Chestertown	M
Western Maryland College, Westminster	M
MASSACHUSETTS	
Amherst College, Amherst	A-N
Boston College, Chestnut Hill	A
Boston University, Boston	A-N
Clark University, Worcester	A-N
Harvard University, Cambridge	A-N
Holy Cross College, Worcester	A
International Y. M. C. A. College, Springfield	N
Junior College of Bradford Academy,* Bradford	N
Massachusetts Agricultural College, Amherst	A
Massachusetts Institute of Technology, Cambridge	A-N
Mount Holyoke College, South Hadley	A-N
Radcliffe College, Cambridge	A-N
Simmons College, Boston	A-N
Smith College, Northampton	A-N
Tufts College, Tufts College (Medford)	A-N
Wellesley College, Wellesley	A-N
Wheaton College, Norton	A-N
Williams College, Williamstown	A-N
Worcester Polytechnic Institute, Worcester	A
MICHIGAN	
Albion College, Albion	A-C
Alma College, Alma	C
Battle Creek College, Battle Creek	C
Bay City Junior College,* Bay City	C
Calvin College and Seminary, Grand Rapids	C
College of the City of Detroit, Detroit	C
Emanuel Missionary College,* Berrien Springs	C
Flint Junior College,* Flint	C
Grand Rapids Junior College,* Grand Rapids	C
Highland Park Junior College,* Highland Park	C
Hillsdale College, Hillsdale	C
Hope College, Holland	C
Kalamazoo College, Kalamazoo	A-C
Marygrove College, Detroit	C
Michigan College of Mining and Technology, Houghton	C
Michigan State College of Agriculture and Applied Science, East Lansing	C
Michigan State Normal College, Ypsilanti	C
Michigan State Teachers College (Western), Kalamazoo	C
Michigan State Teachers College (Central), Mount Pleasant	C
Michigan State Teachers College (Northern), Marquette	C
Muskegon Junior College,* Muskegon	C
Port Huron Junior College,* Port Huron	C
University of Detroit, Detroit	C
University of Michigan, Ann Arbor	A-C
MINNESOTA	
Carleton College, Northfield	A-C
College of St. Catherine, St. Paul	A-C
College of St. Scholastica, Duluth	C
College of St. Teresa, Winona	A-C
College of St. Thomas, St. Paul	C
Concordia College, Moorhead	C
Duluth Junior College,* Duluth	C
Eveleth Junior College,* Eveleth	C
Gustavus Adolphus College, St. Peter	C
Hamline University, St. Paul	A-C
Hibbing Junior College,* Hibbing	C
Macalester College, St. Paul	A-C
Rochester Junior College,* Rochester	C
St. Olaf College, Northfield	A-C
University of Minnesota, Minneapolis	A-C
Virginia Junior College,* Virginia	C
MISSISSIPPI	
Blue Mountain College, Blue Mountain	S
Delta State Teachers College, Greenville	S
Gulf Park College,* Gulfport	S
Harrison-Stone-Jackson Agricultural H. S. and Junior College,* Perkinston	S
Hinds County Junior College,* Raymond	S
Millsaps College, Jackson	A-S
Mississippi Agricultural and Mechanical College,‡ A. & M. College (Starkville)	S
Mississippi College, Clinton	S
Mississippi Woman's College, Hattiesburg	S
Mississippi State College for Women,‡ Columbus	S
Pearl River College,* Poplarville	S
Mississippi State Teachers College,‡ Hattiesburg	S
Sunflower County Junior College,* Moorhead	S
University of Mississippi,‡ University	S
Whitworth College,* Brookhaven	S
MISSOURI	
Central College, Fayette	A-C
Christian College,* Columbia	C
Culver-Stockton College, Canton	C
Drury College, Springfield	A-C
Junior College of Flat River,* Flat River	C
Junior College of Kansas City,* Kansas City	C
Kemper Military School,* Boonville	C
Lindenwood College, St. Charles	C
Missouri State Teachers College (Southeast), Cape Girardeau	C
Missouri State Teachers College (Northeast), Kirksville	C
Missouri State Teachers College (Northwest), Maryville	C
Missouri State Teachers College (Southwest), Springfield	C
Missouri State Teachers College (Central), Warrensburg	C
Missouri Valley College, Marshall	C
Park College, Parkville	A-C
Principia, The,* St. Louis	C
Stephens College,* Columbia	C
St. Joseph's Junior College,* St. Joseph	C
St. Louis University, St. Louis	A-C
Tarkio College, Tarkio	C
Teachers College of Kansas City,* Kansas City	C
University of Missouri, Columbia	A-C
Washington University, St. Louis	A-C
Webster College, Webster Groves	C
Wentworth Military Academy,* Lexington	C
Westminster College, Fulton	A-C
William Jewell College, Liberty	A-C
William Woods College,* Fulton	C
MONTANA	
Intermountain Union College,* Helena	C-W
Montana State College, Bozeman	A-C
Mount St. Charles College,* Helena	C
University of Montana, Missoula	A-C
NEBRASKA	
Creighton University, Omaha	C
Doane College, Crete	A-C
Hastings College, Hastings	C
Nebraska Wesleyan University, Lincoln	C
Union College,* College View	C
University of Nebraska, Lincoln	A-C
NEVADA	
University of Nevada, Reno	A
NEW HAMPSHIRE	
Dartmouth College, Hanover	A-N
University of New Hampshire, Durham	A-N
NEW JERSEY	
College of St. Elizabeth, Convent	A-M
Georgian Court College, Lakewood	M
Princeton University, Princeton	A-M
Rutger's University, New Brunswick	A-M
Steven's Institute of Technology, Hoboken	A-M
NEW MEXICO	
New Mexico College of Agriculture and Mechanic Arts, State College	C
New Mexico State Teachers College, Silver City	C
University of New Mexico, Albuquerque	C
NEW YORK	
Adelphi College, Garden City	M
Alfred University, Alfred	A-M
Barnard College, New York	A-M
Canisius College, Buffalo	M
Clarkson School of Technology, Potsdam	M
Colgate University, Hamilton	A-M
College of Mount Saint Vincent-on-Hudson, New York	M
College of New Rochelle, New Rochelle	A-M
College of St. Bonaventure, Alleghany	M
College of St. Rose, Albany	M
College of the City of New York	A-M
College of the Sacred Heart, New York	M
Columbia University, New York	A-M
Cornell University, Ithaca	A-M
D'Youville College, Buffalo	M
Elmira College, Elmira	A-M
Fordham University, New York	A-M
Good Counsel College, White Plains	M
Hamilton College, Clinton	A-M
Hobart College, Geneva	A-M
Hunter College, New York	A-M
Keuka College, Keuka Park	M
Manhattan College, New York	M
Marymount College, Tarrytown-on-Hudson	M
Nazareth College, Rochester	M
New York State College for Teachers, Albany	A
New York University, New York	A-M
Niagara University, Niagara Falls	M
Polytechnic Institute of Brooklyn, Brooklyn	A-M
Rensselaer Polytechnic Institute, Troy	A-M
Russell Sage College, Troy	M
St. John's College, Brooklyn	M
St. Joseph's College for Women, Brooklyn	M
St. Lawrence University, Canton	A-M
St. Stephens College, Annandale-on-Hudson	A-M
Skidmore College, Saratoga Springs	M
Syracuse University, Syracuse	A-M
Union College, Schenectady	A-M
United States Military Academy, West Point	A
University of Buffalo, Buffalo	A-M
University of Rochester, Rochester	A-M
Vassar College, Poughkeepsie	A-M
Wells College, Aurora	A-M
William Smith College, Geneva	M
NORTH CAROLINA	
Catawba College, Salisbury	S
Davidson College, Davidson	A-S
Duke University, Durham	A-S
East Carolina Teachers College, Greenville	S
Elon College, Elon College	S
Greensboro College, Greensboro	S
Guilford College, Guilford College	S

TABLE 3.—*Approved Colleges of Arts and Sciences and Junior Colleges—Continued*

Name of College and Location	*Authority*
Lenoir Rhyne College, Hickory	S
Mars Hill College,* Mars Hill	S
Meredith College, Raleigh	A-S
North Carolina College for Women, Greensboro	S
North Carolina State College of Agriculture and Engineering, Raleigh	S
Salem College, Winston-Salem	S
St. Mary's School,* Raleigh	S
University of North Carolina, Chapel Hill	A-S
Wake Forest College, Wake Forest	S
NORTH DAKOTA	
Jamestown College, Jamestown	C
North Dakota Agricultural College, Fargo	C
University of North Dakota, University (Grand Forks)	A-C
OHIO	
Antioch College, Yellow Springs	C
Ashland College, Ashland	C
Baldwin-Wallace College, Berea	C
Capital University, Columbus	C
Case School of Applied Science, Cleveland	A-C
College of Wooster, Wooster	A-C
Denison University, Granville	A-C
Heidelberg College, Tiffin	A-C
Hiram College, Hiram	A-C
John Carroll University, Cleveland	C
Kenyon College, Gambier	A-C
Lake Erie College, Painesville	A-C
Marietta College, Marietta	A-C
Miami University, Oxford	A-C
Mount Union College, Alliance	A-C
Muskingum College, New Concord	C
Notre Dame College, South Euclid	C
Oberlin College, Oberlin	A-C
Ohio State University, Columbus	A-C
Ohio University, Athens	A-C
Ohio Wesleyan University, Delaware	A-C
Otterbein College, Westerville	A-C
University of Akron, Akron	A-C
University of Cincinnati, Cincinnati	C
University of Dayton, Dayton	C
University of the City of Toledo, Toledo	C
Ursuline College, Cleveland	C
Xavier University (formerly St. Xavier College), Cincinnati	C
Western College for Women, Oxford	A-C
Western Reserve University, Cleveland	A-C
Wittenberg College, Springfield	A-C
OKLAHOMA	
Northeastern Oklahoma Junior College,* Miami	C
Oklahoma Agricultural and Mechanical College, Stillwater	C
Oklahoma State College for Women, Chickasha	A-C
Panhandle Agricultural and Mechanical College,* Goodwell	C
Phillips University, Enid	C
University of Oklahoma, Norman	A-C
University of Tulsa, Tulsa	C
OREGON	
Albany College, Albany	W
Linfield College, McMinnville	W
Marylhurst College, Oswego	W
Mount Angel College,* St. Benedict	W
Oregon Agricultural College, Corvallis	A-W
Oregon State Normal School, Monmouth	W
Pacific University, Forest Grove	W
Reed College, Portland	A-W
Southern Oregon Normal School, Ashland	W
State Normal School, La Grande	W
University of Oregon, Eugene	A-W
Willamette University, Salem	A-W
PENNSYLVANIA	
Albright College, Reading	M
Allegheny College, Meadville	A-M
Bryn Mawr College, Bryn Mawr	A-M
Bucknell University, Lewisburg	A-M
Carnegie Institute of Technology, Pittsburgh	A-M
Dickinson College, Carlisle	A-M
Drexel Institute, Philadelphia	A-M
Franklin and Marshall College, Lancaster	A-M
Geneva College, Beaver Falls	M
Gettysburg College, Gettysburg	A-M
Grove City College, Grove City	M
Haverford College, Haverford	A-M
Juniata College, Huntington	M
Lafayette College, Easton	A-M
La Salle College, Philadelphia	M
Lebanon Valley College, Annville	M
Lehigh University, South Bethlehem	A-M
Lincoln University, Lincoln University	M
Marywood College, Scranton	M
Moravian College (for men), Bethlehem	M
Mt. St. Joseph College, Philadelphia	M
Muhlenberg College, Allentown	A-M
Pennsylvania College for Women, Pittsburgh	M
Pennsylvania State College, State College	A-M
Rosemont College, Rosemont	M
St. Joseph's College, Philadelphia	M
St. Thomas College, Scranton	M
St. Vincent College, Latrobe	M
Seton Hill College, Greensburg	M
Susquehanna University, Selinsgrove	M
Swarthmore College, Swarthmore	A-M
Temple University, Philadelphia	M
Thiel College, Greenville	M
University of Pennsylvania, Philadelphia	A-M
University of Pittsburgh, Pittsburgh	A-M
Ursinus College, Collegeville	A-M
Villa Maria College, Immaculata	M
Villanova College, Villanova	M
Washington and Jefferson College, Washington	A-M
Westminster College, New Wilmington	A-M
Wilson College, Chambersburg	A-M
RHODE ISLAND	
Brown University, Providence	A-N
Pembroke College (Women's College of Brown University), Providence	A-N
Rhode Island State College, Kingston	N
SOUTH CAROLINA	
Clemson College, Clemson	S
Coker College, Hartsville	S
College of Charleston, Charleston	S
Converse College, Spartanburg	A-S
Erskine College, Due West	S
Furman University, Greenville	A-S
Limestone College, Gaffney	S
Presbyterian College of South Carolina, Clinton	S
The Citadel (The Military College of South Carolina), Charleston	S
University of South Carolina, Columbia	A-S
Winthrop College, Rock Hill	A-S
Wofford College, Spartanburg	A-S
SOUTH DAKOTA	
Augustana College, Sioux Falls	C
Dakota Wesleyan University, Mitchell	C
Huron College, Huron	C
Sioux Falls College,* Sioux Falls	C
South Dakota State College of Agriculture and Mechanic Arts Brookings	C
South Dakota State School of Mines, Rapid City	C
University of South Dakota, Vermilion	A-C
Yankton College, Yankton	C
TENNESSEE	
Carson and Newman College, Jefferson City	S
East Tennessee State Teachers College, Johnson City	S
Fisk University, Nashville	S
George Peabody College for Teachers, Nashville	A-S
Hiwassee College,* Madisonville	S
Maryville College, Maryville	S
Middle Tennessee State Teachers College, Murfreesboro	S
Nashville Agricultural Normal Institute,* Madison	S
Southwestern, Memphis	S
Tennessee Wesleyan College,* Athens	S
Tusculum College, Greenville	S
University of Chattanooga, Chattanooga	A-S
University of Tennessee, Knoxville	A-S
University of the South, Sewanee	A-S
Vanderbilt University, Nashville	A-S
Ward Belmont,* Nashville	S
West Tennessee State Teachers College, Memphis	S
TEXAS	
Agricultural and Mechanical College of Texas, College Station	S
Baylor College for Women, Belton	S
Baylor University, Waco	S
Brownsville Junior College,* Brownsville	S
College of Industrial Arts, Denton	A-S
East Texas State Teachers College, Commerce	S
Incarnate Word College, San Antonio	A-S
John Tarleton Agricultural College,* Stephenville	S
Lon Morris College,* Jacksonville	S
North Texas State Teachers College, Denton	S
Our Lady of the Lake College, San Antonio	A-S
Rice Institute, Houston	A-S
Sam Houston State Teachers College, Huntsville	S
Simmons University, Abilene	S
Southern Methodist University, Dallas	A-S
South Park College,* Beaumont	S
Texas College of Arts and Industries, Kingsville	S
South-West Texas State Teachers College, San Marcos	S
Southwestern University, Georgetown	S
Stephen F. Austin State Teachers College, Nagodoches	S
Sul Ross State Teachers College, Alpine	S
Texas Christian University, Fort Worth	A-S
Texas Technological College, Lubbock	S
Trinity University, Waxahachie	S
University of Texas, Austin	A-S
West Texas Teachers College, Canyon	S
UTAH	
Agricultural College of Utah, Logan	A-W
Brigham Young University, Provo	A-W
University of Utah, Salt Lake City	A
VERMONT	
Middlebury College, Middlebury	A-N
University of Vermont, Burlington	A-N
VIRGINIA	
Averett College,* Danville	S
Bridgewater College, Bridgewater	S
William and Mary College, Williamsburg	A-S
East Radford State Teachers College, East Radford	S
Emory and Henry College, Emory	S
Hampden-Sidney College, Hampden-Sidney	S
Lynchburg College, Lynchburg	S
Randolph-Macon College, Ashland	A-S
Randolph-Macon Woman's College, Lynchburg	A-S
Roanoke College, Roanoke	S
State Teachers College, Farmville	S
State Teachers College, Fredericksburg	S
State Teachers College, Harrisonburg	S

TABLE 3.—*Approved Colleges of Arts and Sciences and Junior Colleges—Continued*

Name of College and Location	*Authority*
Sullins College,* Bristol	S
Sweet Briar College, Sweet Briar	A-S
University of Richmond, Richmond	A-S
University of Virginia, Charlottesville	A-S
Virginia Intermont College,* Bristol	S
Virginia Military Institute, Lexington	S
Virginia Polytechnic Institute, Blacksburg	S
Washington and Lee University, Lexington	A-S
WASHINGTON	
College of Puget Sound, Tacoma	W
Gonzaga University, Spokane	W
State College of Washington, Pullman	A-W
State Normal School, Bellingham	W
State Normal School, Cheney	W
State Normal School, Ellensburg	W
University of Washington, Seattle	A-W
Whitman College, Walla Walla	A-W
WEST VIRGINIA	
Concord State Teachers College, Athens	C
Bethany College, Bethany	A-C
Marshall College, Huntington	C
Potomac State School,* Keyser	C
West Virginia State College (formerly West Virginia Collegiate Institute), Institute	C
West Virginia University, Morgantown	C
West Virginia Wesleyan College, Buckhannon	C
WISCONSIN	
Beloit College, Beloit	A-C
Carroll College, Waukesha	C
Lawrence College, Appleton	A-C
Marquette University, Milwaukee	C
Milwaukee-Downer College, Milwaukee	A-C
Milwaukee State Teachers College, Milwaukee	C
Mount Mary College (formerly St. Mary's College, Prairie du Chien) Milwaukee	C
Ripon College, Ripon	A-C
State Teachers College, Oshkosh	C
University of Wisconsin, Madison	A-C
Wisconsin State Teachers College, La Crosse	C
WYOMING	
University of Wyoming, Laramie	A-C
CANADA	
McGill University, Montreal	A
University of Toronto, Toronto	A

* See special notes (page 611) regarding credentials from junior colleges and normal schools.

‡ Suspended by the Association of Colleges and Secondary Schools of the Southern States at a meeting held Dec. 4, 1930; this suspension to take effect Sept. 1, 1931.

Minimum Standard of Education Preliminary to the Study of Medicine

The minimum requirement for admission to an approved medical college is a four-year high school education or its full equivalent and two years of work in a college of arts and science approved by the Council on Medical Education and Hospitals.

I. HIGH SCHOOL REQUIREMENTS

(*a*) For admission to the two-year premedical college course, students shall have completed a four-year course of at least fifteen units in a standard accredited high school or other institution of standard secondary school grade, or have the equivalent as demonstrated by examinations conducted by the College Entrance Examination Board, or by the authorized examiner of a standard college or university approved by the Council on Medical Education and Hospitals. A detailed statement of attendance at the secondary school, and a transcript of the student's work, should be kept on file by the college authorities. This evidence of actual attendance at the secondary schools should be obtained, no matter whether the student is admitted to the freshman or to higher classes.

(*b*) Credits for admission to the premedical college course may be granted for any subjects counted by a standard accredited high school as a part of the requirements for its diploma.

II. PREMEDICAL COLLEGE COURSE

(*c*) The minimum requirement for admission to acceptable medical schools, in addition to the high school work specified above, will be sixty semester hours of collegiate work, exclusive of military and physical education, extending through two years, of thirty-two weeks each, exclusive of holidays, in a college approved by the Council on Medical Education and Hospital. The subjects included in the two years of college work, should be in accordance with the following schedule.*

SUGGESTIONS REGARDING INDIVIDUAL SUBJECTS

(*a*) *Chemistry.*—Twelve semester hours required of which at least eight semester hours must be in general inorganic chemistry, including four semester hours of laboratory work and four semester hours in organic chemistry, including two semester hours of laboratory work. In the interpretation of this rule, work in qualitative analysis may be counted as general inorganic chemistry.

(*b*) *Physics.*—Eight semester hours required, of which at least two must be laboratory work. It is urged that this course be preceded by a course in trigonometry.

(*c*) *Biology.*—Eight semester hours required, of which four must consist of laboratory work. This requirement may be satisfied by a course of eight semester hours in either general biology or zoology, or by courses of four semester hours each in zoology and botany, but not by botany alone.

(*d*) *English Composition and Literature.*—The usual introductory college course of six semester hours, or its equivalent, is required.

SCHEDULE OF SUBJECTS OF THE TWO YEAR PREMEDICAL COLLEGE COURSE

Sixty Semester Hours † Required

Required Subjects:	Semester Hours
Chemistry (a)	12
Physics (b)	8
Biology (c)	8
English composition and literature (d)	6
Other nonscience subjects (e)	12
Subjects Strongly Urged:	**Semester Hours**
A modern foreign language (f)	6-12
Advanced botany or advanced zoology	3-6
Psychology and logic	3-6
Advanced mathematics, including algebra and trigonometry	3-6
Additional courses in chemistry	3-6
Other Suggested Electives: English (additional), economics, history, sociology, political science, mathematics, Latin, Greek, drawing.	

† A semester hour is the credit value of sixteen weeks' work consisting of one lecture or recitation period per week, each period to be not less than fifty minutes net, at least two hours of laboratory work to be considered as the equivalent of one lecture or recitation period.

(*e*) *Nonscience Subjects.*—Of the sixty semester hours required as the measurement of two years of college work, at least eighteen, including the six semester hours of English, should be in subjects other than the physical, chemical or biologic sciences.

(*f*) *Foreign Language.*—A reading knowledge of a modern foreign language is strongly urged. If the reading knowledge of this language is obtained on the basis of high school work, the student is urged to take another language in his college course. It is not considered advisable, however, to spend more than twelve of the required sixty semester hours on foreign languages.

(*g*) *In General.*—This premedical course in both quantity and quality must be such as to make it acceptable as the equivalent of the first two years of the course in reputable, approved colleges of arts and sciences leading to the degree of Bachelor of Science.

* This schedule was prepared by a special committee as follows: Chairman, Kendric C. Babcock, Ph.D., Provost of the University of Illinois, Urbana, formerly Specialist in Higher Education, United States Bureau of Education, Washington; George Gailey Chambers, Ph.D., Entrance Examiner, University of Pennsylvania; Theodore Hough, Ph.D., formerly Dean of the University of Virginia Department of Medicine; W. F. R. Phillips, M.D., Professor of Anatomy, Medical College of the State of South Carolina; N. P. Colwell, M.D., Secretary of the Council on Medical Education and Hospitals of the American Medical Association. Dr. Babcock, the chairman, was an active member of the Commission on Higher Institutions of the North Central Association of Colleges and Secondary Schools. At the time the committee was meeting, the University of Pennsylvania held the presidency of the Association of American Universities. As will be noted, therefore, the schedule was determined by very efficient representatives of the associations of colleges and universities.

PART II. MEDICAL EDUCATION

Deans and registrars of medical colleges have contributed the reports on which the following statistics are based. Acknowledgment is made herewith of their splendid cooperation.

STATISTICS OF MEDICAL COLLEGES

Table 1 gives the figures for the academic year 1930-1931 for the recognized medical colleges in the United States and Canada. The figures in heavy type are the totals for each of the states. These are shown collectively in table 3, page 622. New York, with the largest number of medical colleges, was the first in the number of medical students, having a total of 2,687; Pennsylvania second with 2,353, and Illinois third with 2,263. There were 645 graduates in New York, 517 in Pennsylvania and 501 in Illinois. On page 638 will be found the description of medical colleges.

DEVELOPMENTS IN MEDICAL EDUCATION

In 1928 the Council discontinued the classification A, B and C, as applied to medical schools, listing them thereafter only as approved or unapproved. There has been some confusion since that time in the use of the terms "class A" and "approved," so that in view of the fact that the term "class A" was still being generally used, a ruling was recently passed to the effect that:

> The terms "class A" and "approved," when used in reference to medical colleges, shall be synonymous and may be used interchangeably.

The time-honored division of students into classes (freshman, sophomore, junior and senior) is being somewhat modified in a few of the medical schools in line with similar developments in higher education. The quarter system or "continuous session plan" as adopted by some of the medical schools, particularly as applied to the clinical years, and the greater freedom allowed students in the selection of courses has tended in this direction. Dean Harvey recently mentioned the following advantages in the plan: "(1) continuous use for educational purposes of the buildings and equipment, especially of the hospital which must operate continuously in any case, (2) opportunity for the distribution throughout the year of the teaching service of professors and for the prosecution of their research work at the season and place most suitable for it, and (3) it permits students to graduate a little earlier and a little younger."[3] Of the seven medical schools operating under the quarter system, the University of Tennessee College of Medicine adopted the plan in 1930 and Duke University School of Medicine began instruction in that year under the quarter system. This plan, which enables the able student to graduate in considerably less than four years, may modify to some extent the criticism that the average medical student in the United States is nearing 30 years of age before he is ready to enter practice.

Another development in medical education is the attempt to bring the student into earlier contact with patients and to bring about a closer connection between the preclinical and the clinical subjects. Some of the schools have named these courses "correlation clinics" in which the clinicians and the teachers in the basic sciences attempt to apply the basic principles of anatomy, physiology, biochemistry and pathology to clinical problems. Clinical subjects are being introduced earlier in several of the schools. At the Indiana University School of Medicine, internal medicine is taught during the second year.[4]

The University of Missouri School of Medicine announces that clinical instruction will again be offered this fall at Columbia, after a lapse of twenty-one years, to a selected number of second year students. The faculty and the state medical association have cooperated to bring about this desirable result.

At the eighty-second annual session of the American Medical Association, held at Philadelphia recently,[5] the House of Delegates approved the Council's progress report in regard to the study of hospitals for nervous and mental diseases, emphasizing, among other points, the following: "Medical students and physicians need more adequate training in psychiatry." This statement led to an investigation of what the medical colleges are offering in psychiatry and neuropsychiatry. The data relating to the teaching of psychiatry in chart A has

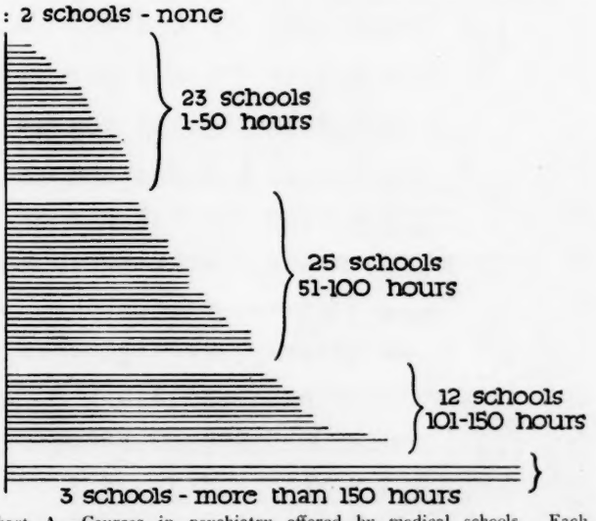


Chart A.—Courses in psychiatry offered by medical schools. Each line represents a school.

been collected from the medical school catalogues of 1930. The hours devoted to neuro-anatomy and neuropathology are not included in the chart. Of the two schools that offered no courses in psychiatry, one required 50 hours and the other 103 hours of neurology. In the 23 schools offering less than 50 hours of psychiatry, most of them offered more than the usual amount of work in neurology.

In regard to the internships and residencies in neuropsychiatry, there are 26 general hospitals which offer services in nervous and mental diseases, 67 hospitals which are affiliated with nervous and mental hospitals for intern service, and 66 special hospitals which offer residencies in psychiatry or neuropsychiatry. A few others offer externships to junior and senior medical students in the vacation periods.

CHANGES IN RATINGS OF MEDICAL SCHOOLS

The University of Southern California School of Medicine, Los Angeles, was given provisional approval in 1928, its students being given full credit for work.

(Continued on page 620)

3. Harvey, B. C. H.: The Continuous Session Plan, Proceedings of the Annual Congress on Medical Education, Medical Licensure and Hospitals, Feb. 16-18, 1931, A. M. A. Press.

4. Emerson, C. P.: Problems in Medical Education, Proceedings of Annual Congress on Medical Education, Medical Licensure and Hospitals, Feb. 16-18, 1931, A. M. A. Press.

5. J. A. M. A. **96**: 2118-2119 (June 20) 1931.

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

Marginal Number	NAME and LOCATION OF COLLEGE	Population of City where College is Located, 1930 Census	Classification by Council	Number of Students Registered 1930-1931		Graduates 1931		Graduates with A.B., B.S., Ph.B.	Number of Teachers	Weeks in College Year	Total Fees (Dollars)				Executive Officer	Session of 1931–1932		Marginal Number
				Men	Women	Men	Women				1st Year	2d Year	3d Year	4th Year		Begins 1931	Ends 1932	
	ALABAMA			**101**	**3**													
1	University of Alabama Sch. of Med., University (P.O.)—Tuscaloosa[3]	20,659	A	101	3	...	..	...	22	35	221.50	241.50	...	...	Stuart Graves, M.D., Dean	Sept. 10	May 24	1
	ARKANSAS			**179**	**5**	**32**	**..**	**13**										
2	University of Arkansas School of Medicine, Little Rock [2]	81,679	A	179	5	32	..	13	85	35	165	160	155	155	Frank Vinsonhaler, M.D., Dean	Sept. 16	May 31	2
	CALIFORNIA			**799**	**87**	**104**	**19**	**151**										
3	University of California Medical School, Berkeley-San Francisco [1,2]	634,394†	A	192	37	48	8	56	346	35	290	225	225	225	Langley Porter, M.D., Dean	Aug. 17	May 14	3
4	College of Medical Evangelists, Loma Linda-Los Angeles [1,6]	1,238,048†	A	347	26	74	4	43	230	50	258.50	248.50	334.50	316.50	Edward H. Risley, M.D., Dean, Loma Linda... Llewellyn C. Kellogg, M.D., Dean, Los Angeles	July 2	June 19	4
5	University of Southern California School of Medicine, Los Angeles *	1,238,048	A[8]	85	8	...	..	..	48	34	396	398.50	...	...	Paul S. McKibben, Ph.D., Dean	Sept. 14	June 4	5
6	Stanford University School of Medicine, Stanford University (P. O.)-San Francisco [1]	634,394	A	175	16	42	7	49	212	33	392	354	315	315	William Ophüls, M.D., Dean, San Francisco...	Oct. 1	June 20	6
	COLORADO			**213**	**7**	**47**	**1**	**25**										
7	University of Colorado School of Medicine, Denver [2]	287,861	A	213	7	47	1	25	175	34	211	231	181	191	Maurice H. Rees, M.D., Dean	Sept. 28	June 13	7
	CONNECTICUT			**186**	**13**	**41**	**7**	**47**										
8	Yale University School of Medicine, New Haven	162,655	A	186	13	41	7	47	246	33	505	500	500	520	Milton C. Winternitz, M.D., Dean	Oct. 1	June 15	8
	DISTRICT OF COLUMBIA			**1,048**	**23**	**225**	**5**	**159**										
9	Georgetown University School of Medicine, Washington	486,869	A	551	..	102	..	84	209	33	460	410	360	365	John L. Gipprich, S.J., Acting Dean	Sept. 17	June 4	9
10	George Washington University School of Medicine, Washington	486,869	A	277	17	71	3	35	202	35	432	432	432	388	Earl Baldwin McKinley, M.D., Dean	Sept. 23	June 15	10
11	Howard University College of Medicine, Washington	486,869	A	220	6	52	2	40	97	33	274.50	274.50	264.50	264.50	Numa P. G. Adams, M.D., Dean	Oct. 1	June 9	11
	GEORGIA			**352**	**2**	**72**	**1**	**41**										
12	Emory University School of Medicine, Atlanta	360,691	A	209	..	48	..	35	158	34	270	255	255	280	Russell H. Oppenheimer, M.D., Dean	Sept. 29	June 7	12
13	University of Georgia Medical Department, Augusta [2]	60,342	A	143	2	24	1	6	65	34	105	100	100	100	William L. Moss, M.D., Dean	Sept. 26	June 6	13
	ILLINOIS			**2,163**	**94**	**477**	**24**	**400**										
14	Loyola University School of Medicine, Chicago [1]	3,376,438	A	493	14	95	1	77	262	33	363.50	377.50	332	298	Louis D. Moorhead, M.D., Dean	Oct. 1	June 11	14
15	Northwestern University Medical School, Chicago [1]	3,376,438	A	498	16	127	4	82	399	34	355	355	355	355	Irving S. Cutter, M.D., Dean	Sept. 29	June 13	15
16	University of Chicago, Graduate School of Medicine of the Division of Biological Sciences [1]	3,376,438	A	204	31	3	1	4	196	34	375	375	375	375	B. C. H. Harvey, M.D., Dean	Oct. 1	June 15	16
17	University of Chicago, Rush Medical College [1]	3,376,438	A	314	19	129	13	147	277	34	...	...	380	400	Ernest E. Irons, M.D., Dean	Oct. 1	Sept. 2	17
18	University of Illinois College of Medicine, Chicago [1]	3,376,438	A	570	14	123	5	90	301	33	185	165	165	165	David John Davis, M.D., Dean	Oct. 5	June 11	18
	INDIANA			**416**	**27**	**97**	**5**	**93**										
19	Indiana University School of Medicine, Bloomington-Indianapolis [2]	364,161†	A	416	27	97	5	93	233	35	187	175	175	175	B. D. Myers, M.D., Dean, Bloomington... Charles P. Emerson, M.D., Dean, Indianapolis	Sept. 14	June 10	19
	IOWA			**379**	**22**	**83**	**7**	**40**										
20	State University of Iowa College of Medicine, Iowa City [2]	15,340	A	379	22	83	7	40	109	33	192	192	192	192	Henry S. Houghton, M.D., Dean	Sept. 21	June 6	20
	KANSAS			**245**	**8**	**57**	**1**	**41**										
21	University of Kansas School of Medicine, Lawrence-Kansas City [2]	121,857†	A	245	8	57	1	41	153	36	162	154	155	160	Harry R. Wahl, M.D., Dean, Kansas City	Sept. 17	June 6	21
	KENTUCKY			**333**	**5**	**86**	**1**	**48**										
22	University of Louisville School of Medicine, Louisville	307,745	A	333	5	86	1	48	143	34	365	365	370	380	John Walker Moore, M.D., Dean	Sept. 17	June 4	22
	LOUISIANA			**449**	**19**	**97**	**3**	**59**										
23	Tulane University of Louisiana School of Medicine, New Orleans	458,762	A	449	19	97	3	59	154	35	350	340	325	355	Charles C. Bass, M.D., Dean	Sept. 23	June 7	23
	MARYLAND			**653**	**34**	**149**	**11**	**69**										
24	Johns Hopkins University School of Medicine, Baltimore	804,874	A	250	28	62	7	69	366	32	611	610	610	610	Alan M. Chesney, M.D., Dean	Sept. 29	June 14	24
25	University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore [2]	804,874	A	403	6	87	4	..	231	33	385	375	375	390	J. M. H. Rowland, M.D., Dean	Sept. 28	June 4	25
	MASSACHUSETTS			**1,188**	**34**	**294**	**8**	**73**										
26	Boston University School of Medicine, Boston [4]	781,188	A	204	19	44	3	29	171	35	391.50	391.50	391.50	401.50	Alexander S. Begg, M.D., Dean	Sept. 17	June 13	26
27	Harvard University Medical School, Boston	781,188	A	517	..	131	..	..	451	36	405	400	400	400	David L. Edsall, M.D., Dean	Sept. 28	June 23	27
28	Tufts College Medical School, Boston	781,188	A	467	15	119	5	44	253	32	407	402	352	362	A. Warren Stearns, M.D., Dean	Sept. 23	May 29	28
	MICHIGAN			**827**	**55**	**198**	**15**	**140**										
29	University of Michigan Medical School, Ann Arbor [2]	26,944	A	527	47	147	15	122	134	34	200	205	205	202.50	Arthur C. Curtis, M.D., Sec	Sept. 28	June 20	29
30	Detroit College of Medicine and Surgery, Detroit [1,2]	1,568,662	A	300	8	51	..	18	134	35	200	200	200	200	W. H. MacCracken, M.D., Dean	Sept. 24	June 18	30
	MINNESOTA			**478**	**27**	**118**	**5**	**123**										
31	University of Minnesota Medical School, Minneapolis [1,2]	464,356	A	478	27	118	5	123	331	37	243	243	243	243	Elias P. Lyon, M.D., Dean	Sept. 28	Aug. 27	31
	MISSISSIPPI			**61**														
32	University of Mississippi School of Medicine, University (Oxford)*	2,890	A[9]	61	..	...	..	...	18	34	200.75	208.25	...	...	P. L. Mull, M.D., Dean	Sept. 17	May 30	32
	MISSOURI			**915**	**12**	**188**	**3**	**123**										
33	University of Missouri School of Medicine, Columbia * [2]	14,967	A	71	1	...	..	...	32	38	130	121	...	...	Edgar Allen, Ph.D., Dean	Sept. 15	June 8	33
34	St. Louis University School of Medicine, St. Louis	821,960	A	532	..	113	..	62	200	33	385	380	380	400	Rev. Alphonse M. Schwitalla, Ph.D., Dean	Sept. 22	June 1	34
35	Washington University School of Medicine, St. Louis	821,960	A	312	11	75	3	61	282	35	422	417	417	422	W. McKim Marriott, M.D., Dean	Sept. 24	June 7	35
	NEBRASKA			**593**	**14**	**116**	**..**	**84**										
36	Creighton University School of Medicine, Omaha	214,006	A	273	8	53	..	40	108	34	405	385	325	335	Hermann von W. Schulte, M.D., Dean	Sept. 24	June 3	36
37	University of Nebraska College of Medicine, Omaha	214,006	A	320	6	63	..	44	132	34	217	212	212	212	C. W. M. Poynter, M.D., Dean	Sept. 18	June 6	37
	NEW HAMPSHIRE			**43**														
38	Dartmouth Medical School, Hanover *	3,043	A	43	..	...	..	...	21	34	410	400	...	...	John P. Bowler, M.D., Dean	Sept. 16	June 21	38

	NEW HAMPSHIRE			**43**															
38	**Dartmouth Medical School, Hanover** *	3,043	A	43	..	...	..	...	21	34	410	400	...	...	John P. Bowler, M.D., Dean	Sept. 16	June 21	38	
	NEW YORK			**2,548**	**139**	**612**	**33**	**439**											
39	**Albany Medical College, Albany**	127,412	A	123	3	29	..	25	96	37	320	315	305	305	Thomas Ordway, M.D., Dean	Sept. 28	June 20	39	
40	**Long Island College of Medicine, Brooklyn**	2,560,401	A	424	9	99	2	51	248	34	545	560	530	560	Adam M. Miller, A.M., Dean	Sept. 28	June 4	40	
41	**University of Buffalo School of Medicine, Buffalo**	573,076	A	569	7	69	1	69	278	34	527	532	517	527	Edward W. Koch, M.D., Dean	Sept. 28	June 15	41	
42	**Cornell University Medical College, Ithaca–New York**	6,930,446†	A	261	25	58	9	95	244	34	555	550	529	540	[illegible] Corbin Robinson, M.D., Director, New York	Sept. 28	June 4	42	
43	**Columbia University College of Physicians and Surgeons, New York**	6,930,446	A	386	34	92	9	97	626	34	555	550	529	540	Willard C. Rappleye, M.D., Dean	Sept. 23	June 1	43	
44	**New York Homeopathic Medical College and Flower Hosp., New York**	6,930,446	A	341	7	77	3	..	170	36	540	530	530	560	Claude A. Burrett, M.D., Dean	Sept. 22	June 7	44	
45	**University and Bellevue Hospital Medical College, New York**	6,930,446	A	468	27	123	4	125	287	36	540	528	517	538	Samuel A. Brown, M.D., Dean	Sept. 16[7]	June 8	45	
46	**University of Rochester School of Medicine, Rochester**	328,132	A	146	12	30	4	34	174	35	400	400	400	400	George H. Whipple, M.D., Dean	Sept. 21	June 18	46	
47	**Syracuse University College of Medicine, Syracuse**	209,326	A	179	5	35	1	19	174	33	400	400	400	410	Herman G. Weiskotten, M.D., Dean	Sept. 25	June 6	47	
	NORTH CAROLINA			**197**	**7**														
48	**University of North Carolina School of Medicine, Chapel Hill** * [2]	2,699	A	77	3	...	..	...	12	36	250	250	...	...	I. H. Manning, M.D., Dean	Sept. 18	June 2	48	
49	**Duke University School of Medicine, Durham**	52,037	A	66	4	...	..	...	47	33	450	...	450	...	Wilburt C. Davison, M.D., Dean	Oct. 1	Sept. 4	49	
50	**Wake Forest College School of Medicine, Wake Forest** *	1,536	A	54	..	...	..	...	14	33	220	225	...	...	Thurman D. Kitchin, M.D., Dean	Sept. 15	June 2	50	
	NORTH DAKOTA			**56**	**4**														
51	**University of North Dakota School of Medicine, University (P.O.)—Grand Forks** * [2]	17,112	A	56	4	...	..	...	13	33	75	75	...	...	H. E. French, M.D., Dean	Sept. 15	June 7	51	
	OHIO			**839**	**51**	**185**	**11**	**154**											
52	**University of Cincinnati College of Medicine, Cincinnati** [1,2]	451,160	A	271	21	58	2	47	246	33	360	360	360	380	Arthur C. Bachmeyer, M.D., Dean	Sept. 21	June 11	52	
53	**Western Reserve University School of Medicine, Cleveland**	900,429	A	237	18	54	4	58	221	35	380	365	355	365	Torald Sollman, M.D., Dean	Sept. 17	June 16	53	
54	**Ohio State University College of Medicine, Columbus** [2]	290,564	A	331	12	73	5	49	127	38	196	186	186	193	John H. J. Upham, M.D., Dean	Sept. 29	June 14	54	
	OKLAHOMA			**221**	**6**	**43**	..	**41**											
55	**University of Oklahoma School of Medicine, Oklahoma City** [2]	185,389	A	221	6	43	..	41	111	34	128	95.50	33	25.50	LeRoy Long, M.D., Dean (resigned)	Sept. 21	June 7	55	
	OREGON			**225**	**19**	**53**	**6**	**59**											
56	**University of Oregon Medical School, Portland** [2]	301,815	A	225	19	53	6	59	208	35	200	195	190	190	Richard B. Dillehunt, M.D., Dean	Oct. 3	June 13	56	
	PENNSYLVANIA			**2,197**	**156**	**486**	**31**	**324**											
57	**Hahnemann Medical College and Hospital of Philadelphia**	1,950,961	A	502	..	93	..	23	185	33	350	350	300	300	William A. Pearson, M.D., Dean	Sept. 28	June 9	57	
58	**Jefferson Medical College of Philadelphia**	1,950,961	A	581	..	141	..	79	233	35	440	430	425	425	Ross V. Patterson, M.D., Dean	Sept. 23	June 3	58	
59	**Temple University School of Medicine, Philadelphia**	1,950,961	A	382	9	61	3	22	188	34	485	455	435	455	William N. Parkinson, M.D., Dean	Sept. 30	June 16	59	
60	**University of Pennsylvania School of Medicine, Philadelphia**	1,950,961	A	482	13	132	2	127	348	34	520	500	500	500	William Pepper, M.D., Dean	Sept. 28	June 22	60	
61	**Woman's Medical College of Pennsylvania, Philadelphia**	1,950,961	A	...	121	...	24	17	84	33	388	407	432	454	Martha Tracy, M.D., Dean	Sept. 23	June 8	61	
62	**University of Pittsburgh School of Medicine, Pittsburgh**	669,817	A	250	13	59	2	56	211	34	415	400	400	410	Ralcigh R. Huggins, M.D., Dean	Sept. 21	June 8	62	
	SOUTH CAROLINA			**151**	**5**	**39**	**2**	**15**											
63	**Medical College of the State of South Carolina, Charleston**	62,265	A	151	5	39	2	15	74	34	185	185	190	190	Robert Wilson, M.D., Dean	Sept. 24	June 2	63	
	SOUTH DAKOTA			**44**	**1**														
64	**University of South Dakota School of Medicine, Vermilion** * [2]	2,850	A	44	1	...	..	...	11	34	100	100	...	...	George R. Albertson, M.D., Dean	Sept. 14	June 4	64	
	TENNESSEE			**778**	**27**	**149**	**5**	**104**											
65	**University of Tennessee College of Medicine, Memphis** [3]	253,143	A	393	9	56	3	21	213	46	360.50	340.50	325.50	355.50	Orren W. Hyman, Ph.D., Administrative Officer	July 7	June 13	65	
66	**Meharry Medical College, Nashville**	153,866	A	200	5	43	1	33	62	33	250	250	250	260	John J. Mullowney, M.D., President	Oct. 1	June 2	66	
67	**Vanderbilt University School of Medicine, Nashville**	153,866	A	185	13	50	1	50	191	35	315	315	315	320	Waller S. Leathers, M.D., Dean	Sept. 22	June 8	67	
	TEXAS			**669**	**18**	**142**	**3**	**85**											
68	**Baylor University College of Medicine, Dallas**	260,475	A	340	10	69	3	29	132	34	312	297	282	287	Walter H. Moursund, M.D., Dean	Sept. 28	May 30	68	
69	**University of Texas School of Medicine, Galveston**	52,938	A	329	8	73	..	56	58	32	82	78	66	80	George E. Bethel, M.D., Dean	Oct. 1	May 31	69	
	UTAH			**64**	**2**														
70	**University of Utah School of Medicine, Salt Lake City** *	140,267	A	64	2	...	..	...	20	34	190	200	...	...	B. I. Burns, M.D., Dean	Sept. 24	June 5	70	
	VERMONT			**141**	**10**	**30**	**1**	**22**											
71	**University of Vermont College of Medicine, Burlington** [2]	24,789	A	141	10	30	1	22	74	35	300	300	300	300	James N. Jenne, M.D., Dean	Sept. 18	June 20	71	
	VIRGINIA			**581**	**15**	**138**	**3**	**64**											
72	**University of Virginia Department of Medicine, Charlottesville** [2]	15,245	A	222	9	44	3	21	69	37	322.50	300	275	270	J. Carroll Flippin, M.D., Dean	Sept. 17	June 14	72	
73	**Medical College of Virginia, Richmond** [2]	182,929	A	359	6	94	..	43	140	35	300	300	292.50	322.50	Lee E. Sutton, Jr., M.D., Acting Dean	Sept. 15	May 31	73	
	WEST VIRGINIA			**121**	**6**														
74	**West Virginia University School of Medicine, Morgantown** * [2]	16,186	A	121	6	...	..	...	22	35	115	115	...	...	John N. Simpson, M.D., Dean	Sept. 15	June 7	74	
	WISCONSIN			**533**	**33**	**100**	**6**	**91**											
75	**University of Wisconsin Medical School, Madison** [2]	57,899	A	283	26	39	5	44	116	36	150	150	150	150	Charles R. Bardeen, M.D., Dean	Sept. 23	June 21	75	
76	**Marquette University School of Medicine, Milwaukee** [1]	578,249	A	250	7	61	1	47	169	33	364	354	354	339	Bernard Francis McGrath, M.D., Dean	Sept. 28	June 8	76	
	CANADA [5]			**2,596**	**112**	**430**	**22**	**207**											
77	**University of Alberta Faculty of Medicine, Edmonton, Alta**	65,163	A	138	6	29	2	12	83	31	220	220	220	220	Allan C. Rankin, M.D., Dean	Sept. 25	May 13	77	
78	**University of Manitoba Faculty of Medicine, Winnipeg, Man**	191,998	A	219	20	47	2	14	131	32	260	250	260	260	S. Willis Prowse, M.D., Dean	Sept. 25	May 28	78	
79	**Dalhousie University Faculty of Medicine, Halifax, N.S.**	57,674	A	144	1	23	..	18	64	33	250	250	250	250	John Stewart, M.D., Dean	Sept. 8	May 10	79	
80	**Queen's University Faculty of Medicine, Kingston, Ont.**	23,096	A	303	..	41	..	8	54	33	175	183	183	208	Frederick Etherington, M.D., Dean	Sept. 23	May 25	80	
81	**University of Western Ontario Medical School, London, Ont.**	60,685	A	129	12	32	3	6	71	33	200	200	208	233	A. B. Macallum, M.D., Dean	Sept. 23	May 27	81	
82	**University of Toronto Faculty of Medicine, Toronto, Ont.**	519,290	A	734	58	125	11	27	267	32	171	220	300	220	Alexander Primrose, M.D., Dean	Sept. 29	May 21	82	
83	**McGill University Faculty of Medicine, Montreal, Que.**	607,063	A	458	12	96	4	63	191	34	267	267	267	267	Charles F. Martin, M.D., Dean	Sept. 16	April 27	83	
84	**University of Montreal Faculty of Medicine, Montreal, Que.**	607,063	A	185	..	31	..	26	110	36	225	207	242	220	Louis de Lotbiniere Harwood, M.D., Dean	Sept. 15	June 15	84	
85	**Laval University Faculty of Medicine, Quebec, Que.**	94,058	A	254	..	36	..	33	68	36	160	170	160	160	Arthur Rousseau, M.D., Dean	Sept. 9	May 25	85	
86	**University of Saskatchewan Sch. of Med. Sciences, Saskatoon, Sask.** *	31,234	A	32	3	...	..	...	12	34	80	80	...	...	W. Stewart Lindsay, M.D., Dean	Oct. 1	May 27	86	

* Gives only the first two years of the medical course.

† The populations for the following cities are: Loma Linda, 2,500; Berkeley, 82,109; Bloomington, 18,227; Lawrence, 13,726; Ithaca, 20,708.

1. Hospital internship required for graduation. See table 5 for the fifth year registration.

2. The following universities make an additional charge for nonresidents: Arkansas, $100; California, $300; Colorado, $132; Georgia, $300; Indiana, $75 first year, $175 next three years; Iowa, $264; Kansas, $50; Maryland, $150; Michigan, $100; Detroit, $85; Minnesota, $25; Missouri, $15; North Carolina, $75; North Dakota, $75; Ohio State, $105; Cincinnati, $50 (nonresidents of Cincinnati); Oklahoma, $200; Oregon, $60; South Dakota, $50; Vermont, $75, (an activity fee of $30 is charged all students not holding academic degrees or in attendance four years previously); Medical College of Virginia, $100; Virginia, $20; West Virginia, $250 and Wisconsin, $50.

3. For residents of the state the charge is reduced $50 each quarter.

4. Total fees are $5 additional each year for men.

5. See College Items for fifth and sixth year fees.

6. Twelve months each for first two years. See College Items.

7. Fourth year students report for ward work Aug. 31, 1931.

8. The first two years as now given are approved and the plans thus far made for the third year, which is to begin in the fall of 1931, have also been endorsed.

9. Approval held in abeyance until effect of recent changes can be determined.

(Continued from page 617)

done in that institution. It was not until June 8, 1931, however, that full approval was given to the work of the first two years as it is being conducted at present. The Council also endorsed the plans thus far made for the third year (clinical instruction), which is to begin in the fall of 1931. The addition of well known, experienced teachers as heads of the three major clinical departments and the assurance of adequate financial support made this action possible.

The University of Mississippi School of Medicine continues on a very uncertain basis, its approval being "held in abeyance until the effect of recent changes can be determined." The Council has been consistently lenient toward this school since the almost disastrous events which took place there last year were felt to be due to political causes outside the control of the school authorities. The dean of the school, Dr. P. L. Mull, and his devoted faculty have been upheld by the Mississippi State Medical Association, the Association of American

TABLE 2.—*Distribution of*

Marginal Number	NAME OF COLLEGE	1 Alabama 240	2 Arizona 166	3 Arkansas 63	4 California 811	5 Colorado 291	6 Connecticut 338	7 Delaware 32	8 Dist. Columbia 196	9 Florida 119	10 Georgia 315	11 Idaho 47	12 Illinois 1,422	13 Indiana 568	14 Iowa 481	15 Kansas 324	16 Kentucky 300	17 Louisiana 213	18 Maine 93	19 Maryland 376	20 Massachusetts 741	Marginal Number
1	University of Alabama School of Medicine	48	..	..	..	..	1	..	..	1	1	..	1	1	1	..	1	1	..	..	..	1
2	University of Arkansas School of Medicine	2	126	..	1	1	..	..	..	1	..	..	2	8	..	1	4	2	..	..	..	2
3	University of California Medical School	..	..	..	219	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
4	College of Medical Evangelists	..	1	..	79	8	3	..	5	2	..	3	6	6	6	14	1	..	3	5	9	4
5	University of Southern California School of Medicine	..	1	..	86	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
6	Stanford University School of Medicine	..	2	1	164	..	..	..	1	..	..	1	..	2	1	..	..	..	..	..	..	6
7	University of Colorado School of Medicine	3	..	..	15	158	1	..	..	..	..	1	2	..	1	1	..	..	..	..	1	7
8	Yale University School of Medicine	..	..	..	3	..	65	..	..	1	..	..	1	1	1	..	2	..	7	..	21	8
9	Georgetown University School of Medicine	..	..	..	..	..	25	1	63	..	..	1	1	1	..	..	..	..	4	14	26	9
10	George Washington University School of Medicine	2	.	5	8	..	2	1	77	..	2	3	3	1	1	..	2	..	..	10	1	10
11	Howard University College of Medicine	10	..	3	..	..	2	..	24	5	9	1	..	..	..	3	3	3	..	7	3	11
12	Emory University School of Medicine	19	1	..	..	..	1	..	..	16	109	..	..	1	..	..	1	1	..	..	..	12
13	University of Georgia Medical Department	..	..	..	..	..	..	..	..	..	141	..	..	..	..	..	1	..	..	..	..	13
14	Loyola University School of Medicine	..	..	1	7	5	2	..	..	6	..	..	258	9	3	..	1	..	1	..	1	14
15	Northwestern University Medical School	1	4	1	25	1	..	..	..	1	..	9	212	13	12	20	2	..	..	..	..	15
16	University of Chicago, Graduate School of Medicine of the Division of Biological Sciences	2	1	1	2	2	2	1	..	1	2	2	141	12	11	8	4	..	..	..	7	16
17	University of Chicago, Rush Medical College	5	4	1	9	1	2	..	..	3	..	1	84	10	12	3	4	..	..	..	5	17
18	University of Illinois College of Medicine	3	..	..	1	..	..	..	..	..	..	..	550	2	2	..	1	1	..	..	3	18
19	Indiana University School of Medicine	..	..	..	2	..	..	..	..	..	..	..	3	418	..	..	1	..	..	..	..	19
20	State University of Iowa College of Medicine	1	..	..	..	..	..	..	..	..	..	1	3	..	360	1	1	1	..	..	..	20
21	University of Kansas School of Medicine	..	..	..	1	..	..	..	..	..	..	..	..	..	..	200	..	..	..	..	..	21
22	University of Louisville School of Medicine	6	1	1	..	..	2	..	..	1	1	1	2	24	1	..	180	..	..	..	..	22
23	Tulane University of Louisiana School of Medicine	57	8	..	7	2	1	..	2	30	10	..	1	1	..	..	4	171	..	1	..	23
24	Johns Hopkins University School of Medicine	5	..	4	13	1	8	2	4	3	6	1	5	2	..	1	2	..	7	41	10	24
25	University of Maryland School of Medicine	..	..	..	3	..	12	3	1	..	..	..	1	..	..	..	..	..	2	162	2	25
26	Boston University School of Medicine	..	..	..	..	..	14	..	..	..	..	..	..	..	..	2	..	..	12	..	100	26
27	Harvard University Medical School	6	..	..	17	6	16	2	1	2	5	1	13	3	6	10	5	1	17	4	132	27
28	Tufts College Medical School	..	..	..	1	..	54	..	..	..	..	..	1	..	..	..	1	..	16	..	314	28
29	University of Michigan Medical School	1	2	..	4	2	2	..	1	1	1	2	4	10	1	8	..	..	2	1	6	29
30	Detroit College of Medicine and Surgery	1	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	30
31	University of Minnesota Medical School	..	..	..	6	..	..	..	..	..	..	..	3	1	2	1	..	..	..	..	..	31
32	University of Mississippi School of Medicine	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	32
33	University of Missouri School of Medicine	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	33
34	St. Louis University School of Medicine	1	5	1	15	3	5	..	..	2	1	1	42	5	5	9	1	3	..	..	4	34
35	Washington University School of Medicine	..	2	7	19	3	..	..	..	1	..	4	31	7	2	10	3	..	..	..	2	35
36	Creighton University School of Medicine	..	..	..	48	1	1	..	..	..	1	2	4	..	26	9	1	..	..	..	1	36
37	University of Nebraska College of Medicine	..	..	..	2	3	..	..	..	..	..	..	2	..	4	8	..	..	..	..	..	37
38	Dartmouth Medical School	..	..	..	1	3	2	..	1	..	..	..	1	..	1	..	..	..	..	..	8	38
39	Albany Medical College	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	39
40	Long Island College of Medicine	..	..	..	1	..	15	..	..	..	..	..	..	..	..	..	..	..	1	..	2	40
41	University of Buffalo School of Medicine	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	41
42	Cornell University Medical College	2	1	1	8	..	7	..	1	..	4	1	1	2	1	2	1	..	3	2	8	42
43	Columbia University College of Physicians and Surgeons	1	..	..	3	1	22	..	1	1	1	..	1	..	..	..	..	..	..	1	9	43
44	New York Homeopathic Med. College and Flower Hosp.	..	..	..	..	..	3	..	..	..	..	..	1	3	..	..	..	..	..	..	..	44
45	University and Bellevue Hospital Medical College	..	..	..	1	..	15	..	..	..	..	..	..	1	1	1	..	..	1	2	4	45
46	University of Rochester School of Medicine	..	..	..	2	..	9	..	..	..	1	1	..	..	..	..	..	..	2	3	9	46
47	Syracuse University College of Medicine	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	47
48	University of North Carolina School of Medicine	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	48
49	Duke University School of Medicine	..	..	1	..	..	2	..	..	..	2	1	..	..	..	..	..	..	..	..	1	49
50	Wake Forest College School of Medicine	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	50
51	University of North Dakota School of Medicine	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51
52	University of Cincinnati College of Medicine	..	..	..	3	..	..	..	1	..	..	..	1	4	..	1	23	..	..	1	..	52
53	Western Reserve University School of Medicine	..	..	1	1	..	..	..	..	2	..	..	1	3	1	1	1	..	..	..	1	53
54	Ohio State University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	54
55	University of Oklahoma School of Medicine	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	55
56	University of Oregon Medical School	..	..	..	4	..	..	..	..	..	..	7	..	..	..	..	..	..	..	..	..	56
57	Hahnemann Medical College and Hosp. of Philadelphia	..	2	..	2	..	..	6	1	..	..	..	3	4	..	..	1	..	1	..	7	57
58	Jefferson Medical College of Philadelphia	..	1	..	4	..	15	6	1	4	..	..	2	1	1	..	1	..	8	4	9	58
59	Temple University School of Medicine	1	..	..	10	..	1	..	..	3	1	..	2	..	1	..	1	..	..	1	1	59
60	University of Pennsylvania School of Medicine	5	..	..	2	..	2	4	2	10	..	..	2	1	..	4	7	..	3	3	6	60
61	Woman's Medical College of Pennsylvania	1	..	1	3	..	1	3	..	..	..	..	1	1	..	..	1	..	.	3	3	61
62	University of Pittsburgh School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	62
63	Medical College of the State of South Carolina	1	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	63
64	University of South Dakota School of Medicine	..	..	..	..	..	..	..	..	1	..	..	2	..	7	..	..	..	..	..	..	64
65	University of Tennessee College of Medicine	25	..	16	..	..	..	..	..	2	..	..	..	..	..	1	22	7	..	..	..	65
66	Meharry Medical College	5	..	10	2	..	1	1	5	7	10	..	11	3	..	1	..	11	..	5	2	66
67	Vanderbilt University School of Medicine	20	..	7	1	..	..	..	..	4	4	1	2	1	1	1	21	..	..	1	..	67
68	Baylor University College of Medicine	..	3	..	..	..	..	..	..	1	..	..	..	..	1	1	1	8	..	..	..	68
69	University of Texas School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	69
70	University of Utah School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	70
71	University of Vermont College of Medicine	..	..	..	..	..	16	..	..	..	..	..	..	..	..	..	..	..	2	..	14	71
72	University of Virginia Department of Medicine	3	..	..	..	..	..	1	2	3	2	..	1	..	..	1	2	1	..	3	2	72
73	Medical College of Virginia	1	..	..	..	..	1	1	..	2	..	..	..	..	..	..	1	..	..	2	..	73
74	West Virginia University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	74
75	University of Wisconsin Medical School	..	..	..	..	..	1	..	1	..	..	1	10	4	1	1	..	..	..	..	1	75
76	Marquette University School of Medicine	..	..	..	1	..	2	..	..	..	..	..	3	2	5	..	..	..	..	..	1	76
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

Medical Colleges and the American Medical Association in the hope that these detrimental political influences which threaten the life of the school will soon be removed.

HOME STATES OF MEDICAL GRADUATES

In table 2, the number of students who were in attendance at medical colleges during the session of 1930-1931 is divided according to the states from which they came. As in 1929-1930, New York again supplied the largest number of students, with 3,166; Pennsylvania was second with 2,050, Illinois third with 1,422, and Ohio fourth with 1,342. These states supplied, respectively, 3,103, 1,931, 1,366 and 1,265 students in the session 1929-1930. The widespread distribution of students is especially worthy of note, particularly in regard to the three states mentioned. Ohio, California, Massachusetts, Michigan, New Jersey and Texas also had medical students well scattered throughout the country.

Medical Students by States

Marginal Number	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51		Marginal Number
Michigan.....834									3	..	26	1	..	8	..	..	1	..	..	..	2	3	..	..	1	..	..	..	..	..	1	104	1
Minnesota.....524				8	..	..	..	..	2	1	4	..	..	1	5	..	2	..	1	1	1	4	..	..	..	..	1	..	..	..	2	..	184	2
Mississippi.....223				..	..	..	..	..	1	..	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	229	3
Missouri.....471				..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	313	4
Montana.....75				1	..	..	..	..	..	..	..	..	..	..	..	2	2	1	..	6	6	5	..	1	1	19	..	5	1	13	65	193	5
Nebraska.....385				1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	..	..	..	..	..	..	93	6
Nevada.....10				..	1	..	1	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	2	..	..	2	..	..	..	3	4	191	6
New Hampshire.58				1	1	..	..	..	..	1	5	..	2	1	..	1	..	..	..	1	..	2	8	..	..	1	..	3	2	3	..	220	7
New Jersey.....804				2	2	1	..	3	13	2	38	2	..	5	..	1	9	4	..	..	..	5	..	..	..	1	1	..	..	2	3	199	8
New Mexico.....32				1	..	..	..	5	95	..	138	2	..	12	..	..	105	21	2	..	..	..	..	3	10	..	..	..	..	12	6	551	9
New York.....3,166				9	6	5	1	..	4	3	6	6	12	9	8	1	2	..	..	6	1	4	22	..	..	26	1	40	1	4	8	514	15
No. Carolina.....432				7	1	4	..	..	7	2	15	1	2	12	2	2	6	1	..	3	1	5	1	..	..	3	..	12	1	7	8	325	16
No. Dakota.....135				9	3	2	..	2	4	2	19	7	18	13	1	1	13	..	..	21	2	6	7	..	..	2	11	17	..	7	5	333	17
Ohio.....1,342				1	2	..	..	..	..	..	2	..	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	6	..	1	1	584	18
Oklahoma.....283				..	..	..	..	..	4	..	10	..	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	443	19
Oregon.....353				..	..	1	..	..	11	..	11	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	2	..	401	20
Pennsylvania.2,050				43	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	2	..	5	..	253	21
Rhode Island.....135				..	..	..	..	..	7	2	16	2	1	35	..	1	6	..	..	..	4	3	2	..	1	3	8	4	..	4	2	358	22
So. Carolina.....227				6	7	1	..	..	..	..	17	11	..	2	3	..	2	..	..	2	7	54	..	..	2	..	..	..	..	4	10	468	23
So. Dakota.....124				1	52	4	..	..	1	..	17	11	..	2	3	..	2	..	..	2	7	54	..	..	2	..	..	..	..	4	10	468	23
Tennessee.....282				5	1	3	2	2	..	..	33	12	1	9	..	..	29	3	5	2	4	5	..	1	11	2	4	3	..	..	7	278	24
Texas.....816				2	2	..	..	1	14	1	33	12	1	9	..	..	29	3	5	2	4	5	..	1	11	2	4	3	..	..	7	278	24
Utah.....144				..	..	..	..	1	38	..	79	16	..	..	6	..	33	1	1	..	..	..	2	..	3	1	16	1	..	4	1	403	25
Vermont.....106				..	..	2	..	10	10	..	35	1	..	4	..	..	6	20	..	..	1	..	..	..	1	..	..	..	..	..	5	223	26
Virginia.....486				12	4	5	1	5	13	2	51	9	2	26	2	8	22	18	..	3	2	8	2	2	5	16	3	14	1	3	7	517	27
Washington.....170				..	..	..	..	13	6	1	30	..	1	3	..	1	3	24	..	1	..	..	..	2	..	..	..	1	..	4	5	482	28
West Virginia.....328				2	..	..	..	..	14	..	35	1	2	65	1	2	18	1	1	..	1	2	2	..	..	2	8	5	1	2	8	574	29
Wisconsin.....653	352			3	3	1	..	..	14	..	35	1	2	65	1	2	18	1	1	..	1	2	2	..	..	2	8	5	1	2	8	574	29
Wyoming.....14	293			..	..	..	..	..	..	..	..	..	..	8	..	..	2	..	..	..	..	..	..	..	..	..	1	..	..	..	1	308	30
U. S. Possessions.....166	1	427	..	1	9	2	..	..	..	..	5	..	12	1	..	..	..	..	..	9	..	2	..	..	..	4	..	15	..	2	2	505	31
Foreign.....279	..	..	51	..	..	..	..	..	1	..	3	..	..	2	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	61	32
Totals.....21,382	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	1	72	33
Marginal Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33

There were 166 students from the United States possessions and 279 foreign students in attendance at American medical colleges, as compared with 155 students from the United States possessions and 281 from foreign countries in the previous year.

TABLE 3.—*Medical Colleges, Students and Graduates by State*

State	Colleges	Students		Graduates	
		Men	Women	Men	Women
Alabama	1	101	3	...	..
Arkansas	1	179	5	32	..
California	4	799	87	164	19
Colorado	1	213	7	47	1
Connecticut	1	186	13	41	7
District of Columbia	3	1,048	23	225	5
Georgia	2	352	2	72	1
Illinois	5	2,163	94	477	24
Indiana	1	416	27	97	5
Iowa	1	379	22	83	7
Kansas	1	245	8	57	1
Kentucky	1	333	5	86	1
Louisiana	1	449	19	97	3
Maryland	2	653	34	149	11
Massachusetts	3	1,188	34	294	8
Michigan	2	827	55	198	15
Minnesota	1	478	27	118	5
Mississippi	1	61	..	...	..
Missouri	3	915	12	188	3
Nebraska	2	593	14	116	..
New Hampshire	1	43	..	...	..
New York	9	2,548	139	612	33
North Carolina	3	197	7	...	..
North Dakota	1	76	4	...	..
Ohio	3	839	51	185	11
Oklahoma	1	221	6	43	..
Oregon	1	225	19	53	6
Pennsylvania	6	2,197	156	486	31
South Carolina	1	151	5	39	2
South Dakota	1	44	1	...	..
Tennessee	3	778	27	139	5
Texas	2	669	18	142	3
Utah	1	64	2	...	..
Vermont	1	141	10	30	1
Virginia	2	581	15	138	3
West Virginia	1	121	6	...	..
Wisconsin	2	533	33	100	6
Totals	76	20,992	990	4,518	217

NUMBER OF STUDENTS BY CLASSES

In table 4 the students enrolled in each college are shown by classes. The total number for the first year was 6,456, or 1 less than last year; for the second year, 5,538, or 42 more than last year; for the third year, 5,080, or 149 more than last year; while in the fourth year there were 4,908, or 195 more than last year.

FIFTH YEAR MEDICAL STUDENTS

The eleven medical colleges which require a fifth, or intern, year before the M.D. degree is conferred are listed in table 5, with the number of students enrolled in the fifth year. In 1930-1931 there were 1,025 fifth year students enrolled, as compared with 1,081 for the session of 1929-1930.

NUMBER OF MEDICAL STUDENTS

The total number of undergraduate medical students in the recognized schools for the session 1930-1931 (table 6) was 21,982, an increase of 385 over last year. This is the largest number of students enrolled since 1909, when 22,145 students were in attendance at the 140 medical schools then existing. The increase of 385 students over the previous year, however, is about one-half the increase noted in the corresponding gain in 1929. As the number of freshmen in 1930-1931 was actually one less than in the previous year, it is quite likely that in the coming session there will be a smaller total number of students enrolled than in 1930-1931. This conclusion can be verified by referring to table 7, which shows that any one class has its largest enrolment in the freshman year and decreases quite uniformly through the second, third and fourth years.

TABLE 4.—*Medical Students Shown by Classes*

Name of College	Enrolled During 1930-1931				
	1st	2d	3d	4th	Total
University of Alabama School of Medicine	53	51	..	..	104
University of Arkansas School of Medicine	61	45	46	32	184
University of California Medical School	60	56	50	54	220
College of Medical Evangelists	116	94	79	84	373
University of South. California Sch. of Med.	54	39	..	..	93
Stanford University School of Medicine	51	46	50	44	191
University of Colorado School of Medicine	67	50	52	51	220
Yale University School of Medicine	47	54	44	54	199
Georgetown University School of Medicine	166	142	147	96	551
George Washington University Sch. of Med.	89	72	62	71	294
Howard University College of Medicine	61	55	54	56	226
Emory University School of Medicine	63	45	53	48	209
University of Georgia Medical Department	41	37	40	27	145
Loyola University School of Medicine	153	121	119	114	507
Northwestern University Medical School	128	123	130	127	514
University of Chicago, Graduate School of Med. of the Division of Biological Sciences	107	140	52	26	325
University of Chicago, Rush Med. College	...	...	135	198	333
University of Illinois College of Medicine	182	154	124	124	584
Indiana University School of Medicine	134	105	96	108	443
State University of Iowa College of Medicine	97	106	102	96	401
University of Kansas School of Medicine	80	60	59	54	253
University of Louisville School of Medicine	87	79	87	85	338
Tulane University of Louisiana Sch. of Med.	130	121	114	103	468
Johns Hopkins University School of Medicine	70	68	69	71	278
University of Maryland School of Medicine and College of Physicians and Surgeons	138	76	104	91	409
Boston University School of Medicine	67	57	52	47	223
Harvard University Medical School	125	124	138	130	517
Tufts College Medical School	123	119	116	124	482
University of Michigan Medical School	134	144	136	160	574
Detroit College of Medicine and Surgery	88	81	71	68	308
University of Minnesota Medical School	153	142	98	112	505
University of Mississippi School of Medicine	33	28	..	..	61
University of Missouri School of Medicine	40	32	..	..	72
St. Louis University School of Medicine	170	132	110	120	532
Washington University School of Medicine	78	75	92	78	323
Creighton University School of Medicine	104	74	50	53	281
University of Nebraska College of Medicine	99	79	85	63	326
Dartmouth Medical School	23	20	..	..	43
Albany Medical College	36	32	29	29	126
Long Island College of Medicine	119	107	113	104	443
University of Buffalo School of Medicine	78	65	62	70	275
Cornell University Medical College	59	52	60	67	238
Columbia University Coll. of Phys. and Surg.	114	101	103	102	420
New York Homeo. Med. Coll. & Flower Hosp.	107	79	81	81	348
University and Bellevue Hosp. Med. College	129	115	122	129	495
University of Rochester School of Medicine	47	40	37	34	158
Syracuse University College of Medicine	52	49	47	36	184
University of North Carolina School of Med.	42	38	..	..	80
Duke University School of Medicine	52	..	18	..	70
Wake Forest College School of Medicine	30	24	..	..	54
University of North Dakota School of Med.	34	26	..	..	60
University of Cincinnati College of Medicine	90	73	68	61	292
Western Reserve University School of Med.	75	61	61	58	255
Ohio State University College of Medicine	100	90	75	78	343
University of Oklahoma School of Medicine	76	60	48	43	227
University of Oregon Medical School	65	61	55	63	244
Hahnemann Med. College and Hosp of Phila.	155	139	114	94	502
Jefferson Medical College of Philadelphia	156	140	144	141	581
Temple University School of Medicine	111	106	108	66	391
University of Pennsylvania School of Med.	122	104	134	135	495
Woman's Medical College of Pennsylvania	33	39	24	25	121
University of Pittsburgh School of Medicine	67	65	69	62	263
Medical College of the State of So. Carolina	41	39	35	41	156
University of So. Dakota School of Medicine	28	17	..	..	45
University of Tennessee College of Medicine	112	99	96	95	402
Meharry Medical College	56	53	50	46	205
Vanderbilt University School of Medicine	52	42	53	51	198
Baylor University College of Medicine	123	89	66	72	350
University of Texas School of Medicine	107	82	75	73	337
University of Utah School of Medicine	36	30	..	..	66
University of Vermont College of Medicine	44	38	38	31	151
University of Virginia Dept. of Medicine	65	64	54	48	231
Medical College of Virginia	88	82	97	98	365
West Virginia University School of Medicine	82	45	..	..	127
University of Wisconsin Medical School	126	89	49	45	309
Marquette University School of Medicine	75	57	64	61	257
Totals for 1931	6,456	5,538	5,080	4,908	21,982
Totals for 1930	6,457	5,496	4,931	4,713	21,597

TABLE 5.—*1930-1931 Fifth Year Students in Medical Colleges Requiring the Hospital Intern Year for the M.D. Degree*

College of Medical Evangelists	78
Stanford University School of Medicine	50
University of California Medical School	59
Loyola University School of Medicine	160
Northwestern University Medical School	135
University of Chicago, Rush Medical College	142
University of Illinois College of Medicine	120
Detroit College of Medicine and Surgery	82
University of Minnesota Medical School	169
University of Cincinnati College of Medicine	58
Marquette University School of Medicine	62
Total	1,025

Thus the total number in the freshman class in 1928 (table 7) was 6,199; it became the sophomore class in 1929, decreasing to 5,304; in 1930 as the junior class, it numbered only 4,931, and in 1931 the remainder, 4,908, graduated.

TABLE 6.—*Medical Colleges, Students and Graduates*

Year	No. Colleges	Students	Graduates	A.B. or B.S.	Per Cent
1880	100	11,826	3,241	.....	....
1890	133	15,404	4,454	.....	....
1900	160	25,171	5,214	.....	....
1904	160	28,142	5,747	.....	....
1906	162	25,204	5,364	.....	....
1910	131	21,526	4,440	680	15.3
1915	96	14,891	3,536	858	24.3
1920	85	13,798	3,047	1,321	43.5
1921	83	14,466	3,186	1,465	46.0
1922	81	15,635	2,529	1,455	57.5
1923	80	16,960	3,120	1,787	57.3
1924	79	17,728	3,562	2,020	56.7
1925	80	18,200	3,974	2,431	61.2
1926	79	18,840	3,962	2,388	60.3
1927	80	19,662	4,035	2,486	61.5
1928	80	20,545	4,262	2,708	63.5
1929	76	20,878	4,446	2,951	66.4
1930	76	21,597	4,565	3,211	70.0
1931	76	21,982	4,735	3,106	65.6

NUMBER OF MEDICAL GRADUATES

Again referring to table 6, it will be noted that the total number of graduates for the session 1930-1931 was 4,735, or 170 more than last year. The increase in the previous year was 119. This is the largest number of graduates since 1906; and if the comparisons in table 7 are consulted it will be seen that in all probability there will be an increase in the number of medical graduates next year.

TABLE 7.—*Total Students by Classes*

	1st Yr.	2d Yr.	3d Yr.	4th Yr.	Totals
1925	5,492	4,415	4,136	4,157	18,200
1926	5,757	4,779	4,201	4,107	18,840
1927	6,009	4,993	4,510	4,150	19,662
1928	6,199	5,190	4,646	4,510	20,545
1929	6,277	5,304	4,746	4,551	20,878
1930	6,457	5,496	4,931	4,713	21,597
1931	6,456	5,538	5,080	4,908	21,982

TABLE 8.—*Increasing Number of Students with Baccalaureate or Higher Degrees in the United States*

Year	Number of Recognized Medical Colleges	Total Number of Freshmen	Freshmen with Bachelor or Higher Degrees	Per Cent of Freshmen with Degrees	Total Number of Graduates	Graduates with Bachelor or Higher Degrees	Per Cent of Graduates with Degrees
1910-11	120	4,771	631	13.2	4,273	705	16.5
1915-16	96	3,582	803	22.4	3,518	948	26.9
1920-21	83	4,825	1,027	21.2	3,186	1,465	46.0
1925-26	79	5,753	1,781	31.0	3,962	2,388	60.3
1930-31	76	6,456	2,967	45.9	4,735	3,106	65.6

TABLE 9.—*Women in Medicine*

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1904	1,129	4 0	198	3.4
1910	907	4.0	116	2.6
1915	592	4.0	92	2.6
1920	818	5.8	122	4.0
1925	910	5.0	204	5.1
1926	935	5.0	212	5.4
1927	964	4.9	189	4.7
1928	929	4.5	207	4.9
1929	925	4.4	214	4.8
1930	955	4.4	204	4.5
1931	990	4.5	217	4.6

STUDENTS AND GRADUATES WITH ACADEMIC DEGREES

Some interesting figures are presented in table 8, which show a steady and remarkable increase (over five year periods) in the number and the percentage of graduates who also attained baccalaureate or higher degrees. Still more noteworthy is the increase in the number and the percentage of freshmen with baccalaureate or higher degrees. Almost one half (45.9 per cent) of the freshmen in the last session held such degrees.

TABLE 10.—*Percentage of Classes Repeating Courses in Session 1930-1931 on Account of Poor Scholarship*

Name of College	1st Yr.	2d Yr.	3d Yr.	4th Yr.	Total
University of Alabama School of Medicine	3.8	11.8	..	..	7.7
University of Arkansas School of Medicine	9.8	..	..	..	3.3
University of California Medical School	..	..	..	..	..
College of Medical Evangelists	12.0	3.2	1.3	..	4.8
University of So. California School of Medicine	3.7	5.1	..	..	4.3
Stanford University School of Medicine	..	..	..	..	..
University of Colorado School of Medicine	11.9	2.0	..	..	4.1
Georgetown University School of Medicine	..	..	..	..	..
George Washington University School of Medicine	2.2	..	..	4.2	1.7
Howard University College of Medicine	..	..	3.7	1.8	1.3
Emory University School of Medicine	3.2	..	..	..	1.0
University of Georgia Medical Department	..	..	..	..	..
Loyola University School of Medicine	1.3	4.1	..	..	1.4
Northwestern University Medical School	0.8	0.8	..	..	0.4
University of Illinois College of Medicine	3.3	0.7	..	..	1.2
Indiana University School of Medicine	..	1.9	..	..	0.5
State University of Iowa College of Medicine	12.4	11.3	4.9	1.0	7.5
University of Kansas School of Medicine	3.7	10.0	..	1.9	4.0
University of Louisville School of Medicine	2.3	3.8	..	..	1.5
Tulane University of Louisiana School of Medicine	0.8	0.8	3.5	..	1.3
Johns Hopkins University School of Medicine	..	..	..	..	..
University of Maryland School of Medicine and College of Physicians and Surgeons	8.0	..	1.0	..	2.9
Boston University School of Medicine	..	..	..	..	..
Harvard University Medical School	..	..	..	..	..
Tufts College Medical School	0.8	..	..	..	0.2
University of Michigan Medical School	3.0	0.7	0.7	..	1.0
Detroit College of Medicine and Surgery	2.3	3.7	1.4	..	1.9
University of Mississippi School of Medicine	6.1	..	..	..	3.3
University of Missouri School of Medicine	2.5	..	..	..	1.4
St. Louis University School of Medicine	3.5	3.0	0.9	0.8	2.3
Washington University School of Medicine	..	2.7	..	..	0.6
Creighton University School of Medicine	1.9	..	..	3.8	1.4
University of Nebraska College of Medicine	5.1	..	..	..	1.4
Dartmouth Medical School	..	..	..	..	..
Albany Medical College	13.9	6.2	..	3.4	6.4
Long Island College of Medicine	1.7	1.9	3.5	..	1.8
University of Buffalo School of Medicine	6.4	3.1	..	..	2.5
Cornell University Medical College	..	..	1.7	..	4.2
Columbia University College of Phys. and Surgs.	4.4	1.0	..	..	1.4
New York Homeo. Medical College and Flower Hosp.	..	6.3	..	..	1.4
University and Bellevue Hospital Medical College	..	..	..	0.8	0.2
University of Rochester School of Medicine	..	..	..	..	..
Syracuse University College of Medicine	3.8	6.1	..	..	2.7
University of North Carolina School of Medicine	..	..	..	..	..
Wake Forest College School of Medicine	..	..	..	..	..
University of North Dakota School of Medicine	..	3.8	..	..	1.7
University of Cincinnati College of Medicine*	..	..	..	..	..
Western Reserve University School of Medicine	..	..	..	..	..
Ohio State University College of Medicine	8.0	1.1	..	..	2.6
University of Oklahoma School of Medicine	9.2	8.3	..	..	5.3
University of Oregon Medical School	1.5	4.9	..	..	1.6
Hahnemann Med. College and Hosp. of Philadelphia	8.4	7.2	0.9	..	4.8
Jefferson Medical College of Philadelphia	..	..	..	..	..
Temple University School of Medicine	..	..	0.9	1.5	0.5
University of Pennsylvania School of Medicine	..	1.0	..	..	0.2
Woman's Medical College of Pennsylvania	6.1	5.1	4.2	..	4.1
University of Pittsburgh School of Medicine	..	..	1.4	..	0.4
Medical College of the State of South Carolina	12.2	2.6	2.9	..	4.5
University of South Dakota School of Medicine	..	..	..	..	..
Meharry Medical College	12.5	3.8	..	..	4.4
Vanderbilt University School of Medicine	..	..	..	..	..
Baylor University College of Medicine	6.5	10.1	..	..	4.9
University of Texas School of Medicine	5.6†	4.9‡	1.3	..	3.3
University of Utah School of Medicine	..	..	..	..	..
University of Vermont College of Medicine	6.8	2.6	..	..	2.6
University of Virginia Department of Medicine*	..	..	..	..	..
Medical College of Virginia	..	2.4	..	..	0.5
West Virginia University School of Medicine	7.3	..	..	..	4.7
University of Wisconsin Medical School	7.1	6.7	..	..	4.8
Marquette University School of Medicine	4.0	..	..	..	1.2
University of the Philippines College of Medicine and Surgery	16.7	23.1	9.5	..	11.5
University of St. Thomas College of Medicine and Surgery	7.9	2.6	4.2	3.9	4.2
University of Alberta Faculty of Medicine	9.5	4.0	12.5	4.5	6.3
University of Manitoba Faculty of Medicine	21.2	4.5	11.4	..	10.9
Dalhousie University Faculty of Medicine	9.1	2.8	9.1	..	4.7
Queen's University Faculty of Medicine	..	13.2	2.1	..	2.6
University of Western Ontario Medical School	..	..	..	..	..
University of Toronto Faculty of Medicine§	2.2	3.7	4.2	5.8	3.4
McGill University Faculty of Medicine#	4.8	..	1.1	3.1	2.1
University of Montreal Faculty of Medicine	9.3	3.6	..	2.9	3.2
Laval University Faculty of Medicine	5.1	15.1	..	1.9	4.7
University of Saskatchewan Sch. of Med. Sciences*	..	..	..	..	..

* Reports not received
† Five also taking sophomore work.
‡ Also taking junior work.
§ Six are repeating the fifth year and one in the sixth year.
# One student is repeating the fifth year.

WOMEN IN MEDICINE

There were 990 women students in medical schools during the session 1930-1931 (table 9), as compared with 955 for the previous year, an increase of 35. This is the largest number of women in medicine recorded since 1904, and they constituted 4 per cent of the total number of medical students. There were 217 women graduates this year. The number of women students has been quite constant for the past twenty years, although there has been a slight gradual increase since 1929.

"REPEATERS" IN MEDICAL SCHOOLS

A preliminary report of the number of students being allowed to repeat courses in which they failed was published in a previous issue of THE JOURNAL.[6] This study has been continued and the results collected in table 10 (the data are recorded in percentages). The greatest number of repeaters are, of course, students who have failed in their first year of medicine. Failures in the last two years are relatively few. There were no students repeating courses in 15 medical colleges and 7 schools had students repeating only in the first year.

There were 26 schools which accepted a total of 45 failures from other schools (25 were freshmen, 14 sophomores, 4 juniors and 2 seniors), but in most instances compelled them to repeat the courses in which they were deficient. The usual practice among medical schools in regard to failures seems to be that if a student is not given another chance in his own school it is difficult for him to obtain it elsewhere. On the other hand, there were 7 students who were actually given advanced standing after having failed in another school. The number thus admitted was small, but such practices seem wholly unjustified, although it is possible that some of these students made up deficiencies in the summer session of 1930. For instance, to allow a student to undertake the full curriculum of the second year while reviewing in a freshman course in which he has failed is neither fair to him nor to other members of the class. The names of the schools carrying on such practice are not here given but may be published if this should develop into an abuse.

TABLE 11.—*Repetition in Quarter System Schools Session 1930-1931*

Name of School	No. of Students Repeating
Yale University School of Medicine	9*
Graduate School of Medicine of the Division of the Biological Sciences of the University of Chicago	6†
Rush Medical College of the University of Chicago	8‡
University of Minnesota Medical School	17§
University of Tennessee College of Medicine	51‡
Total	91

* Yale University School of Medicine, while not operating on the quarter system, has been included here because of its individualized plan of study. These students failed in the qualifying examination which covers the subjects of the first two years, and were allowed to review these courses before a second examination.
† Repeating one course.
‡ Repeating one quarter's work.
§ Failed or were not eligible for the comprehensive examination.

Listed in table 11 are the number of students repeating courses in the schools operating under the quarter system.

NEGROES IN MEDICAL SCHOOLS

The Negro medical students for the session of 1930-1931 are separated by classes in table 12. The total number of students and graduates for 1927-1928 appear in adjoining columns for comparison. There were 510 Negro students in 1927-1928 and 504 in 1930-1931.

TABLE 12.—*Negro Medical Students*

Name of College	1927-28		1930-31—By Classes					
	Students	Graduates	Freshmen	Sophomore	Junior	Senior	Total	Graduates
Howard University College of Medicine	233	55	60	53	52	55	54	220
Meharry Medical College	211	46	56	53	50	46	44	205
University of California Medical School	..	..	..	2	..	..	..	2
College of Medical Evangelists	2	..	2	4	1	..	..	7
Loyola University School of Medicine	1	1	..	1	..	..	..	1
Northwestern University Medical School	2	1	..	..	..	..	..	..
University of Chicago, Graduate School of Medicine of the Division of Biological Sciences	..	..	1	..	..	2	..	3
University of Chicago, Rush Medical College	14	5	..	..	1	3	..	4
University of Illinois College of Medicine	..	..	..	1	..	1	3	5
Indiana University School of Medicine	6	..	1	..	..	..	2	3
State University of Iowa College of Medicine	..	..	..	2	1	..	..	3
University of Kansas School of Medicine	..	..	2	..	..	..	..	2
Boston University School of Medicine	2	1	1	..	..	..	..	1
Harvard University Medical School	4	..	..	..	..	1	1	1
Tufts College Medical School	3	..	..	1	..	1	1	2
University of Michigan Medical School	7	1	5	1	..	4	4	10
Detroit College of Medicine and Surgery	..	..	1	..	2	1	..	4
University of Minnesota Medical School	..	..	..	..	..	2	2	4
University of Nebraska College of Medicine	1	..	..	..	..	..	..	..
Dartmouth Medical College	..	..	1	..	..	..	..	1
Long Island College of Medicine	1	1	..	1	..	..	..	1
Columbia University Coll. of Phys. & Surgs.	3	1	2	..	..	2	2	4
New York Homeopathic Medical College and Flower Hospital	..	..	..	2	..	..	..	2
Syracuse University College of Medicine	1	..	..	..	..	..	..	..
Western Reserve University School of Med.	2	..	1	..	..	1	1	2
Ohio State University College of Medicine	2	..	2	3	1	..	..	6
Temple University School of Medicine	1	1	..	..	1	..	..	1
University of Pennsylvania School of Med.	..	..	1	..	2	..	..	3
Woman's Medical College of Pennsylvania	1	1	..	1	..	..	..	1
Dalhousie University Faculty of Medicine	2	1	1	1	1	..	..	3
Queen's University Faculty of Medicine	1	1	..	..	..	..	..	..
McGill University Faculty of Medicine	8	3	..	1	2	..	..	3
University of Montreal Faculty of Medicine	2	1	..	..	..	..	..	..
Total	510	120	137	127	114	119	114	504

MEDICAL SCHOOL FEES

Reference is directed to table 1, in which fees charged by medical colleges are recorded. In table 13 these figures have been collected to show the number of schools in various fee groups. Every college except one charging $200 or under is a state university, and three of these have fees less than $100. Most state universities, however, require an additional fee to nonresidents, as is indicated in footnote 2 to table 1.

The average fee per student in 1930-1931 was $302, a slight increase over the preceding year.

TABLE 13.—*College Fees, 1930-1931*

	Colleges	Per Cent
$ 50 to $ 99	3	4.0
100 to 149	4	5.3
150 to 199	10	13.2
200 to 249	9	11.8
250 to 299	7	9.2
300 to 349	9	11.8
350 to 399	14	18.4
400 to 499	11	14.5
500 to 599	8	10.5
600 to 699	1	1.3
Totals	76	100.0
Average fee		$302

Chart B shows the increases that have occurred over five year-periods and the number of medical schools in existence at those times. That part of the cost of a medical education which is represented by tuition fees has increased 141 per cent in twenty years. Scholarships and loan funds afford some assistance to needy students.

6. J. A. M. A. **96**: 1498-1500 (May 2) 1931.

AMERICAN STUDENTS IN FOREIGN SCHOOLS

In view of the reported exodus of American students to foreign medical schools, inquiries were sent to 165 of these schools and up until the time of publication replies have been received from 96 of them, as shown in table 14. The replies reveal an unexpectedly large number of American students studying medicine abroad. The greatest number were registered in Great Britain (321) and Canada (277), but there were also a good many enrolled in Austria (113), Germany (67), Switzerland (58) and Italy (52). The figures represent only undergraduate students. It will be noted also that only a few Americans completed their medical course abroad in 1930-1931 and that there are few enrolled for the coming session 1931-1932 for the reason that admission and matriculation occur almost simultaneously in the fall.

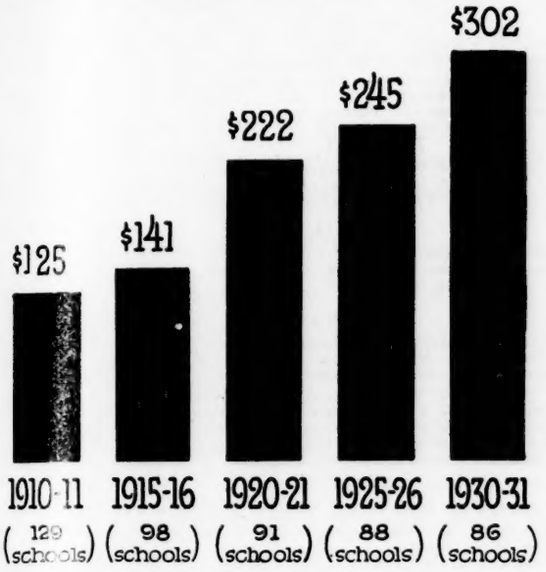


Chart B.—A comparison of the average tuition fees over five year periods showing an increase of 141 per cent in twenty years.

Although no such inquiry has been made previously, it is quite likely that this is the largest group of American undergraduates that has ever studied medicine abroad. A good proportion of the large number of inquiries which have come to the offices of the American Medical Association in regard to foreign medical schools have indicated that these students had been refused admission to American schools or found it almost impossible to be admitted. Whether these students will complete their education abroad or whether after one or two years they will return to this country seeking advanced standing in our medical schools is a matter for conjecture. At any rate the great majority will doubtless return to America to practice.

Vacancies in Medical Schools for Session of 1931-1932

Name of School	1st Yr.	2d Yr.	3d Yr.	4th Yr.
Stanford University School of Medicine, San Francisco	..	4	2	1
University of California Medical School, San Francisco	..	1	2	2
University of So. California Sch. of Med., Los Angeles	..	..	3	5
Howard University College of Med., Washington, D.C.	..	..	4	..
Washington University School of Medicine, St. Louis	..	5	..	..
Woman's Medical College, Philadelphia	10	9	5	1
Medical College of the State of So. Carolina, Charleston	..	7	4	8
Medical College of Virginia, Richmond	14	..	3	..
University of Vermont College of Medicine, Burlington	2	..	..	..

TABLE 14.—*American Students in Foreign Medical Schools*

	Students Enrolled, 1930-1931	Students Who Completed the Medical Course, 1930-1931	Students Enrolled, 1931-1932
AUSTRIA	**113**	**2**	..
Karl-Franzens-Universität, Graz	6	1	..
Leopold-Franzens-Universität, Innsbruck	5	0	..
Universität Wien	102	1	..
BELGIUM	**3**	**0**	..
Université de Bruxelles	3	0	..
Université de Gand	No report		
Université de Liège	0	0	0
Université Catholique de Louvain	No report		
CANADA	**277**	**47**	**236**
University of Alberta, Edmonton	No report		
University of Manitoba, Winnipeg	2	0	..
Dalhousie University, Halifax, N.S.	23	0	..
University of Toronto	10	5	..
Queen's University, Kingston, Ont	9	0	0
University of Western Ontario, London, Ont	16	1	..
McGill University, Montreal, Que	207	40	227
University of Montreal	No report		
Laval University, Quebec, Que	10	1	9
University of Saskatchewan, Saskatoon	0	0	0
CHINA	**0**	**0**	**0**
Peiping Union Medical College	0	0	0
CUBA	**0**	**0**	**0**
Universidad de la Habana	No report		
CZECHOSLOVAKIA	**2**	**0**	..
Deutsche Universität, Prague	No report		
Karlova Universita, Prague	No report		
Universita Komenskeho, Bratislava	2	0	..
DENMARK	**0**	**0**	..
Kobenhavn Universitet	0	0	..
ENGLAND	**51**	**2**	**21**
University of Birmingham	3	0	3
University of Bristol	3	0	6
University of Cambridge	2	0	..
University of Durham, Newcastle-upon-Tyne	No report		
University of Leeds	0	0	0
University of Liverpool	1	0	0
University of London (includes the following medical schools):			
Charing Cross Hospital Medical School	16	1	0
Guy's Hospital Medical School	2	1	2
King's College Hospital Medical School	5	0	7
London Hospital Medical College	0	0	..
London School of Medicine for Women	2	0	3
Middlesex Hospital Medical School	5	0	..
St. Bartholomew's Hospital Medical School	No report		
St. George's Hospital Medical School	3	0	0
St. Mary's Hospital Medical School	7	0	0
St. Thomas' Hospital Medical School	0	0	0
University College Hospital Medical School	0	0	0
Westminster Hospital Medical School	No report		
Victoria University of Manchester	0	0	0
University of Oxford	1	0	0
University of Sheffield	1	0	..
ESTONIA	**0**	**0**	**0**
University of Tartu	No report		
FINLAND	**0**	**0**	**0**
Helsingfors Universitet	No report		
FRANCE	**5**	**0**	**0**
Université de Bordeaux	No report		
Faculté de Lille	0	0	0
Université de Lyons	4	0	..
Université de Montpellier	0	0	..
Faculté de Nancy	0	0	0
Université de Paris	No report		
Université de Toulouse	No report		
Université de Strasbourg	1	0	..
GERMANY	**67**	**1**	**7**
Friedrich-Wilhelms Universität, Berlin	No report		
Rheinische Friedrich-Wilhelms Universität, Bonn	2	0	1
Schlesische-Friedrich-Wilhelms Universität, Breslau	0	1	1
Friedrich-Alexanders Universität, Erlangen	0	0	..
Albert-Ludwigs Universität, Freiburg	No report		
Hessische-Ludwigs Universität, Giessen	0	0	..
Georg-August Universität, Göttingen	4	0	..
Universität Griefswald	0	0	..
Universität Halle on der Saale	2	0	..
Universität Heidelberg	23	0	..
Thüringische Landesuniversität, Jena	No report		
Christian-Albrechts Universität, Kiel	No report		
Albertus-Universität, Königsberg	No report		

0 indicates that no American students were enrolled or completed courses while the symbol .. indicates the school is not able to state at this time if any American students will be enrolled for the session 1931-1932.

TABLE 14.—*American Students in Foreign Medical Schools—Continued*

	Students Enrolled, 1930-1931	Students Who Completed the Medical Course, 1930-1931	Students Enrolled, 1931-1932
GERMANY—Continued			
Universität Leipzig	12	0	5
Marburg Universität	1	0	..
Universität München	17	0	..
Universität Rostock	3	0	..
Eberhard-Karls Universität, Tubingen	0	0	0
Julius-Maximilians Universität, Wurzburg	No report		
Hamburgische Universität	3	0	..
Universität Koln	0	0	0
Universität Frankfurt-am-Main	0	0	..
Westfalischen Wilhelms Universität, Munster	No report		
GREECE	**0**	**0**	**0**
University of Athens	No report		
HUNGARY	**7**	**1**	**..**
Magyar Királyi Pázmány Peter Tudományegyetem, Budapest	6	0	..
Magyar Királyi Ferencz-József Tudományegyetem, Szeged	No report		
Magyar Királyi Erzsébet Tudományegyetem, Pecs	1	1	..
Magyar Királyi Tisza-István-Tudományegyetem, Debrecen	No report		
IRELAND	**14**	**1**	**1**
Queen's University, Belfast	0	0	0
National University of Ireland (includes the following medical schools):			
University College of Dublin	8	0	..
University College, Cork	0	0	..
University College, Galway	0	0	..
University of Dublin, Trinity College	5	0	1
Royal College of Surgeons in Ireland, Dublin	1	1	0
ITALY	**52**	**5**	**0**
Regia Universita di Bologna	No report		
Regia Universita di Cagliari, Sardini	No report		
Regia Universita di Milano	2	0	..
Regia Universita di Catania	No report		
Regia Universita di Firenze	2	0	..
Regia Universita di Genova	No report		
Regia Universita di Messina	3	1	..
Regia Universita di Modena	0	0	..
Regia Universita di Napoli	No report		
Regia Universita di Padova	0	0	0
Regia Universita di Palermo	No report		
Regia Universita di Parma	0	0	0
Regia Universita di Pavia	1	0	..
Regia Universita di Perugia	No report		
Regia Universita di Pisa	No report		
Regia Universita di Roma	40	4	..
Regia Universita di Sassari	0	0	..
Regia Universita di Siena	No report		
Regia Universita di Torino	4	0	..
Regia Universita di Bari	No report		
MEXICO	**0**	**0**	**0**
Universidad Nacional, Mexico, D.F	No report		
Escuela de Nuevo Leon, Monterrey	0	0	..
Escuela de Guadalajara, Jalisco	No report		
Escuela de San Luis Potosi	No report		
Escuela Medico Militar, Mexico, D.F	0	0	0
Escuela de Yucatan, Merida	No report		
Universidad Michoacana de San Nicolao de Hidalgo, Morelia	No report		
Escuela Libre de Homeopatica, Mexico, D.F	No report		
Escuela de Medicina y de Farmacia, Puebla	No report		
Escuela de Medicina, Oaxaca	No report		
NETHERLANDS	**0**	**0**	**0**
Universiteit Van Amsterdam	0	0	0
Rijks-Universiteit te Groningen	0	0	0
Universiteit te Leiden	0	0	..
Rijks-Universiteit, Utrecht	No report		
NORWAY	**0**	**0**	**0**
Kongelige Frederiks Universitet, Oslo	0	0	0
PHILIPPINE ISLANDS	**0**	**0**	**0**
University of St. Thomas, Manila	No report		
University of the Philippines, Manila	No report		
POLAND	**2**	**0**	**2**
Jagiellonic University, Krakow	2	0	2
Johann-Kasimir University, Lwow	No report		
University of Warszawa	0	0	..
University of Poznan	No report		
University of Stefana Batory, Wilno	No report		
PORTUGAL	**0**	**0**	**0**
Universidade de Coimbra	No report		
Universidade de Lisboa	0	0	..
Universidade de Porto, Oporto	No report		
ROUMANIA	**0**	**0**	**0**
Universitatea din Bucuresti	No report		
Universitatea din Iasi	No report		
Universitatea din Cluj	No report		
SCOTLAND	**256**	**19**	**73**
University of Aberdeen	11	0	0
University of St. Andrews Conjoint Medical School, St. Andrews and Dundee	65	0	16
University of Edinburgh	63	19	..
Royal Colleges, Edinburgh	25	0	5
University of Glasgow	29	0	12
Anderson College of Medicine, Glasgow	59	0	40
St. Mungo's College, Glasgow	4	0	0
SPAIN	**0**	**0**	**0**
Universidad de Barcelona	No report		
Facultad de Medicina, Cadiz (controlled by Universidad de Seville)	0	0	0
Universidad de Granada	No report		
Universidad Central de España, Madrid	No report		
Universidad de Santiago	No report		
Universidad de Zaragoza	No report		
Universidad de Valencia	No report		
Universidad Literaria de Valladolid	No report		
Universidad de Salamanca	No report		
SWEDEN	**0**	**0**	**0**
Kungl. Universitet i Lund	0	0	0
Kungl. Karolinska Mediko-Kirurgiska Institutet, Stockholm	No report		
Kungl. Universitet i Uppsala	No report		
SWITZERLAND	**58**	**2**	**23**
Universität Basle	No report		
Universität Bern	38	2	23
Université de Genève	No report		
Université de Lausanne	No report		
Université de Neuchatel	No report		
Zurich Universität	20	0	..
SYRIA	**0**	**0**	**0**
American University of Beirut, Lebanon	No report		
Université de St. Joseph, Beirut, Lebanon	No report		
WALES	**0**	**0**	**0**
Welsh National School of Medicine, Cardiff (controlled by the University of Wales)	0	0	0
YUGOSLAVIA	**0**	**0**	**..**
Zagrebaskog Universiteta	0	0	..

0 indicates that no American students were enrolled or completed courses while the symbol .. indicates the school is not able to state at this time if any American students will be enrolled for the session 1931-1932.

PART III. INTERN SERVICE

The data relating to internships presented herewith were kindly contributed by 664 hospitals approved for internships during the calendar year 1930. Each of these hospitals has been visited at least once, and the present status of internships, as summarized from the questionnaires returned by these institutions, is in accordance with the findings of the hospital visitors. The response to the questionnaire was wholly gratifying and indicates an appreciation of the responsibility of the hospitals for the interns' further education.

The "Essentials in a Hospital Approved for Interns," as promulgated by the Council on Medical Education and Hospitals, limits the field of intern education to institutions that supply adequate clinical material; have an organized, ethical staff; provide laboratories under competent medical supervision; make available library facilities; require complete clinical charts; perform necropsies on 15 per cent of deaths occurring in the hospital, and impose regulations governing intern conduct and duties. The "Essentials" are definite, so that

nonconformity to them is readily discernible. An attempt was also made to ascertain the character of intern instruction as carried out by the attending staff.

These 664 hospitals offered 6,124 internships. By comparison with the number of medical graduates for the session 1930-1931 (4,735), it can be readily seen that the available candidates are insufficient to supply every hospital with its needed quota of interns. Inevitably unequal distribution occurs, for the large city institutions, with abundant clinical material, have little difficulty in securing interns. The small general hospital, remote from teaching centers, finds itself handicapped. These institutions are coming to depend in increasing numbers on residents who, having served one year as interns, are employed for an additional year.

CLINICAL PATHOLOGIC CONFERENCES

The clinical pathologic conference is a most efficient means of instruction, for interns and for staff alike.

TABLE 1.—*Clinical Pathologic Conferences*

How Held	Hospitals
Separately	268
In connection with regular staff meetings	396
	664
How Often	
At each necropsy	5
Daily	6
Semiweekly	7
Weekly	198
Biweekly	48
Triweekly	3
Monthly	384
Bimonthly	7
Every six weeks	2
Quarterly	2
When necessary	1
No answer	1
	664

The value of this type of meeting, where clinical data may be correlated with pathologic observations, is so readily apparent that its part in the hospital program for intern education is becoming generally recognized.

Table 1 contains statistics referring to these conferences. Attention is directed to the 268 hospitals which conducted clinical pathologic conferences in 1930

TABLE 2.—*Part Taken by Interns in Clinical Pathologic Conferences*

	Hospitals
Prepare papers	20
Take part in discussions	115
Present cases	204
Prepare papers, present cases and take part in discussions	175
Attendance only	37
Active part	25
General reports	4
Conducts one conference yearly	2
No participation	12
No answer	70
	664

separate from the regular monthly meetings; 198 hospitals had them as often as once each week; 6 hospitals reported daily conferences, and 5 as occurring at each necropsy. Three hundred and ninety-six listed these conferences as occurring in conjunction with the regular staff meetings.

The part which the intern takes is illustrated in table 2. The majority are called on to present clinical observations, based usually on the intern's own history, physical examination, and progress notes. Quite often, too, he has had a hand in the preparation of the laboratory data and is familiar with such consultations as have been held. In many institutions the interns discussed the cases or prepared pertinent papers, and in two instances actually conducted the conferences.

TABLE 3.—*Who Performs Necropsies?*

	Hospitals
Pathologist	616
Resident physician	8
Intern	14
Staff member	24
Coroners' physician	1
Medical examiner	1
	664

The material for the clinical pathologic conferences is largely derived from necropsies. The number of necropsies, the manner of their performance, and their use for teaching purposes is a reliable indication as to the interest which hospital staffs maintain in scientific medicine. Chart C shows clearly a greatly increased interest in necropsies, following the publication of the Council's requirement. Attention is called particularly to the diminishing number of hospitals which now fall below the minimum percentage.

Who performed necropsies is shown in table 3. Pathologists, specially trained in this work, performed these examinations in 616 institutions. A negligible percentage of examinations were made by staff members, residents or interns.

A great majority of the interns attend necropsies, as the figures in table 4 illustrate. Six hundred and thirteen hospitals report attendance at necropsies by interns; 9 make attendance optional; 31 do not require attendance, and 11 do not answer the question.

TABLE 4.—*Various Services Required of Interns in Approved Hospitals*

	Hospitals			
	Required	Not Required	Optional	No Answer
Presence at necropsies	613	31	9	11
Laboratory service	598	49	..	17
Roentgen-ray service	537	83	..	44
Preparation and presentation of papers	398	178	..	88
Assignment of specific reading	153	401	..	110
Dispensary service	418	183	54	9

Some service in the clinical laboratories by the house staff is quite generally required. Roentgen-ray service is less often required. The accompanying table shows these figures, which are in accordance with the observations of the Council's hospital inspectors. The actual type of training varies widely—from specific services under direct supervision by the laboratory personnel to occasional emergency work. A concurrent service in both clinical and roentgen-ray laboratories is quite widely in vogue and provides a useful and effective combination.

The same table brings out the comparison between the two laboratory services with respect to the requirement of attendance by interns.

LIBRARY

The importance of a medical library in intern hospitals has been stressed, and it is interesting to note what

use has been made of the hospital collections. Interns in 398 hospitals are accustomed to use the library in preparing and presenting papers. In 178 hospitals the interns are not required to prepare papers. In 153 hospitals it is obligatory for the interns to do some collateral reading. In 401 hospitals there is no requirement.

DISPENSARY SERVICE

Besides offering more available clinical material, the outpatient department brings the intern in contact with the early manifestations of disease such as he will encounter in his office practice. There seems to be a tendency, however, on the part of interns to neglect this profitable experience.

TABLE 5.—*Salaries of Interns in Approved Hospitals*

	Number of Hospitals					Number of Interns				
	1923	1925	1927	1929	1930	1923	1925	1927	1929	1930
No salary	195	192	184	169	159	1,660	2,187	2,541	2,675	2,842
$25 per month or less	151	148	201	218	228	907	905	1,446	1,588	1,653
$26 to $50 per month	96	95	130	152	158	323	379	567	631	628
$51 to $100 per month	15	15	9	15	12	44	42	28	58	40
Over $100 per month	2	3	20	21	22	27	40	178	150	196
Salary and bonus	..	8	23	26	61	..	50	145	138	445
Bonus only	5	6	1	4	6	24	37	5	63	125
Fees; salary and fees	3	1	1	..	..	10	8	9	..	..
Varies each 3 or 6 months	..	..	8	13	10	..	..	31	60	139
In lieu of maintenance	..	..	..	4	3	..	..	..	37	41
No fixed amount	23	22	..	..	..	78	87	..	..	..
No report	20	34	1	4	5	46	90	2	15	15
Totals	510	524	578	626	664	3,119	3,825	4,952	5,415	6,124

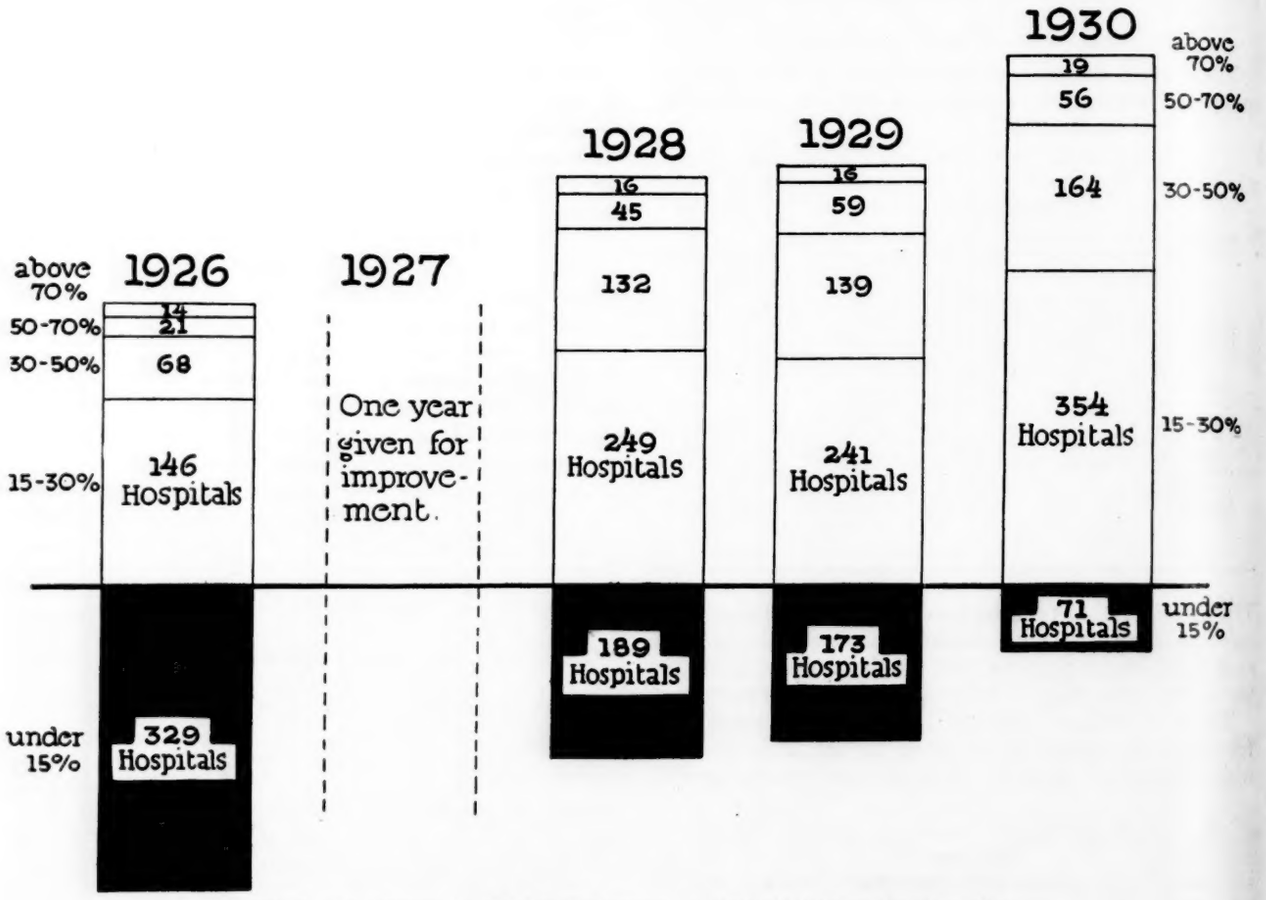


Chart C.—*The Increase in Necropsy Performance in Hospitals Approved for Internships.*

A survey conducted in 1926 by the Council on Medical Education and Hospitals revealed that the majority, even of hospitals approved for intern training, were deficient in necropsy performance. As a consequence a 10 per cent minimum necropsy requirement was established, taking effect Jan. 1, 1928. The intervening year, 1927, was set aside to enable hospitals to get ready to comply with this new ruling. The improvement noted in 1928 and 1929 was so promising that the Council felt justified in raising the requirement to 15 per cent commencing Jan. 1, 1930. There were only seventy-one intern hospitals which had less than 15 per cent in 1930, and most of these were nearly up to the requirement and continuing to increase. In the few hospitals that were dropped from the list for lack of necropsies, there were always other deficiencies, as would be expected.

Table 4 shows the number of hospitals which require dispensary service from their house staffs. A worthwhile trend is indicated by the fact that where outpatient service is available for interns most hospitals require it.

COMPENSATION FOR INTERNS

A common expression among medical students is to the effect that the best internships are offered by hospitals which provide no remuneration except maintenance. This simply means that hospitals where the internship experience is educationally worth while do not have to pay a salary to attract interns. It will be noticed that there has been a gradual reduction in the actual number of hospitals which pay their interns nothing, but that the same hospitals have so increased their house staffs as to make the actual number of nonsalaried interns greater each year. This is accounted for by the need on the part of large municipal and university hospital groups to augment their house staffs. The ease with which these hospitals attract men attests the esteem in which these internships are held.

Meanwhile, the smaller hospitals find it necessary to offer some compensation. The actual salaries are widely varying, the most common being $25 a month, the next $50, and so on, as shown in table 5. Salaries in the army, navy and public health service hospitals are higher, being established by government pay tables according to rank and servce.

HOSPITALS APPROVED FOR INTERNSHIPS

By the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago

Revised to Aug. 15, 1931

The following general hospitals containing 211,299 beds are considered in position to furnish acceptable internships for medical graduates. For list of approved graduate medical schools send 10 cents; for list of hospitals providing approved residencies in certain specialties send 15 cents.

HOSPITALS, 674. INTERNSHIPS, 6,154

Name of Hospital	Location	Number of Beds						Affiliated—For What Service	Internships					
		Surgical	Medical	Obstetric	Pediatric	Other	Total		Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	Dispensary Service
ALABAMA														
Hillman Hospital [1]	Birmingham	158	72	42	28	40	340	No	12	Ap.	12	July	No	Req.
Norwood Hospital [1]	Birmingham	yes	yes	yes	yes	yes	219	No	3	Ap.	12	July	$50	Req.
Employees' Hospital of the Tennessee Coal, Iron and Railroad Co.	Fairfield	104	105	22	48	31	310	No	10	Ap.	12	July	$50	Req.
John A. Andrew Memorial Hospital [1] (col.)	Tuskegee Institute	20	40	10	5	10	85	No	2	Ap.	12	July	$6	Req.
ARIZONA														
St. Joseph's Hospital	Phoenix	yes	yes	yes	yes	yes	184	No	1	Ap.	12	July	Open	None
ARKANSAS														
Woodmen of Union Hospital (col.)	Hot Springs National Park	30	50	10	10	..	100	No	2	Ap.	12	July	No	Req.
Little Rock General Hospital	Little Rock	60	60	10	20	6	156	No	3	Ap.	12	July	$50	Req.
St. Vincent's Infirmary	Little Rock	50	50	15	20	15	150	No	4	Ap.	12	June	$50	None
CALIFORNIA														
General Hospital of Fresno County	Fresno	71	79	16	28	206	400	No	8	Ap.	12	July	$25	Req.
Glendale Sanitarium and Hospital [1]	Glendale	30	190	10	..	20	250	No	2	Ap.	12	July	$75	None
Loma Linda Sanitarium and Hospital [1]	Loma Linda	37	102	16	4	..	159	(3)	4	Ap.	12	July	$75	Req.
Seaside Hospital	Long Beach	98	78	45	yes	79	300	No	5	Ap.	12	July	$25	Req.
California Hospital	Los Angeles	97	48	30	28	104	307	No	12	Ap.	12	Feb. & July	$25	Req.
Cedars of Lebanon Hospital [1]	Los Angeles	yes	yes	38	13	yes	290	No	6	Ap.	12	July	$25	Req.
Hollywood Clara Barton Memorial Hosp.	Los Angeles	142	50	55	66	..	313	No	8	Ap.	12	July	$25	None
Los Angeles County General Hosp., Unit 1 [1]	Los Angeles	837	yes	177	40	yes	1,502	No	94	Ex.	12-24	(1-a)	$20-$30	Op.
Methodist Hospital of Southern California	Los Angeles	87	48	45	14	40	234	No	6	Ap.	12	July	No	Req.
St. Vincent's Hospital	Los Angeles	100	65	43	..	40	248	No	3	Ap.	12	July	$50	None
Santa Fe Coast Lines Hospital	Los Angeles	yes	yes	..	..	..	150	(4)	6	Ap.	12	July	$25	Req.
White Memorial Hospital [1]	Los Angeles	yes	yes	17	14	22	131	No	10	Ap.	12	July	$50 (a)	Req.
U. S. Naval Hospital	Mare Island	184	262	..	..	260	706	(5)	11	Both	12	July	(b)	Req.
Alameda County Hospitals [1]	Oakland	yes	yes	yes	yes	yes	1,179	(6)	24	Both	12	July	$25	Req.
Orange County Hospital [1]	Orange	yes	yes	yes	yes	yes	263	No	4	Ap.	12	July	$25	Req.
Pasadena Hospital	Pasadena	105	43	26	13	24	211	(7)	3	Ap.	12	July	$35	Req.
Sacramento Hospital	Sacramento	90	144	22	40	117	413	No	6	Ap.	12	July	$50	Req.
San Bernardino General Hospital	San Bernardino	30	43	16	15	211	315	No	6	Ap.	12	July	$50	Req.
San Diego County General Hospital	San Diego	134	200	35	57	247	673	No	14	Ap.	12	July	$15-$20	Req.
U. S. Naval Hospital	San Diego	155	360	..	..	255	770	(8)	15	Both	12	July	(b)	Req.
French Hospital [1]	San Francisco	yes	yes	19	16	yes	225	No	6	Ap.	12	July	$40 (c)	Req.
Hospital for Children [2]	San Francisco	yes	yes	44	48	yes	256	(9)	12	Ap.	12	July	$10	Req.
Letterman General Hospital	San Francisco	390	594	27	5	40	1,056	No	12	Ap.	12	July	(b)	Req.
Mary's Help Hospital	San Francisco	yes	yes	30	20	..	160	No	4	Ap.	12	July	$25	Req.
Mount Zion Hospital	San Francisco	57	59	26	30	..	172	No	6	Ap.	12	June	$25	Op.
St. Joseph's Hospital [1]	San Francisco	114	66	18	4	26	228	No	4	Ap.	12	July	$50	None
St. Luke's Hospital [1]	San Francisco	yes	yes	yes	yes	yes	230	No	6	Ap.	12	July	$10 (d)	Req.
St. Mary's Hospital [1]	San Francisco	yes	yes	37	37	..	325	No	5	Ap.	12	July	$25	Req.
San Francisco Hospital [1]	San Francisco	132	221	29	50	781	1,213	(10)	41	Ap.	12	July	$10	None
Southern Pacific General Hospital	San Francisco	150	150	..	..	..	300	(11)	12	Ap.	12	July	$30	Req.
Stanford University Hospitals (including Lane Hospital) [1]	San Francisco	44	31	27	38	202	342	No	12	Ap.	12	July	$10	Req.
U. S. Marine Hospital	San Francisco	200	133	..	..	..	333	(12)	8	Both	12	July	(b)	Req.
University of California Hospital [1]	San Francisco	87	79	53	64	24	287	No	17	Ap.	12	June	$10	Req.
Santa Clara County Hospital	San Jose	70	105	43	38	223	479	No	6	Ap.	12	July	(e)	Req.
St. Francis Hospital [1]	Santa Barbara	35	30	15	5	15	100	(13)	2	Ap.	12	July	$25	Req.
Santa Barbara Cottage Hospital [1]	Santa Barbara	yes	yes	yes	yes	yes	316	(13)	8	Ap.	12	July	$20	Req.
Santa Barbara General Hospital [1]	Santa Barbara	30	47	9	15	86	187	(14)	2	Ap.	12	July	$25	None
COLORADO														
Boulder-Colorado Sanitarium [1]	Boulder	17	76	8	yes	..	101	No	1	Ap.	12	June	$50	Req.
Beth-El General Hospital	Colorado Springs	yes	yes	yes	yes	yes	119	No	1	Ap.	12	July	$25	Req.
Glockner Sanatorium and Hospital	Colorado Springs	yes	yes	13	8	yes	225	No	1	Ap.	12	July	$25	....
St. Francis Hospital [1]	Colorado Springs	32	20	13	10	75	150	No	1	Ap.	12	July	$25	Op.
Colorado General Hospital [1]	Denver	52	52	27	27	..	158	No	9	Ap.	12	July & Aug.	$25	Op.
Denver General Hospital	Denver	112	68	47	50	276	553	No	9	Ap.	18	Jan. & July	$30	Req.
Fitzsimons General Hospital	Denver	yes	yes	4	..	yes	1,832	(15)	8	Ap.	12	July	(b)	None
Mercy Hospital	Denver	75	60	30	..	..	165	(16)	3	Ap.	12	July	$20 (a)	Req.
Presbyterian Hospital [1]	Denver	yes	yes	yes	yes	yes	175	No	4	Ap.	12	July	$25	None
St. Anthony's Hospital	Denver	115	37	23	10	15	200	No	2	Ap.	12	July	$25	None
St. Joseph's Hospital	Denver	yes	yes	yes	yes	yes	250	No	3	Ap.	12	July	$30	None
St. Luke's Hospital	Denver	125	34	35	25	..	219	No	6	Ap.	12	July	$25	None
CONNECTICUT														
Bridgeport Hospital	Bridgeport	60	51	51	25	173	360	No	8	Ap.	12	July	$15	Req.
St. Vincent's Hospital [1]	Bridgeport	70	60	35	36	39	240	(17)	6	Ap.	12	July	$25	Req.
Danbury Hospital	Danbury	60	29	21	yes	20	130	No	2	Ap.	12-24	June	$25-$50	None
Hartford Hospital	Hartford	83	80	62	54	442	721	No	18	Ap.	18	Jan. & July	(f)	None
Municipal Hospital	Hartford	yes	yes	yes	yes	yes	130	No	3	Ap.	12	July	$50	Req.
St. Francis Hospital	Hartford	232	118	100	130	..	580	(18)	10	Ap.	24	July	$15	None
Meriden Hospital	Meriden	yes	yes	21	18	24	136	No	3	Ap.	12	July	$50	None
Middlesex Hospital	Middletown	28	20	25	18	59	150	No	2	Ap.	12	July & Sept.	$35 (k)	None
New Britain General Hospital	New Britain	95	42	41	26	..	204	No	4	Ap.	12	July	$30	Req.
Grace Hospital	New Haven	yes	yes	yes	yes	yes	282	No	9	Ex.	18	Jan. & July	(g)	Req.
Hospital of St. Raphael	New Haven	50	23	30	22	115	240	No	4	Ap.	12	July	$25	None
New Haven Hospital [1]	New Haven	101	112	52	86	83	434	No	22	Ap.	Varies	(1-b)	No	Req.
Lawrence & Memorial Associated Hospitals	New London	22	18	35	34	121	230	No	3	Ap.	12	July	$25	None
William W. Backus Hospital	Norwich	yes	yes	46	8	yes	130	No	2	Ap.	12	July	$50	None

Numerical and other references will be found on page 637.

Name of Hospital	Location	Number of Beds: Surgical	Medical	Obstetric	Pediatric	Other	Total	Affiliated—For What Service	Internships: Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	Dispensary Service
CONNECTICUT—Continued														
Stamford Hospital [1]	Stamford	92	49	43	26	57	267	No	4	Ap.	12	July	$50	Req.
St. Mary's Hospital	Waterbury	80	59	42	16	23	220	No	4	Ap.	12	July	$25	Req.
Waterbury Hospital	Waterbury	yes	yes	28	15	yes	282	No	6	Ap.	12	July & Oct.	$25	Req.
DELAWARE														
Delaware Hospital	Wilmington	40	25	24	35	76	200	No	6	Ap.	12	July	$50	Req.
DISTRICT OF COLUMBIA														
Central Disp. and Emergency Hospital	Washington	yes	yes	..	..	yes	260	No	12	Ap.	12	July	$10	Req.
Freedmen's Hospital [1] (col.)	Washington	54	55	32	27	110	278	No	24	Ex.	12	July & Oct.	$10	Req.
Gallinger Municipal Hospital [1]	Washington	120	150	60	50	230	610	No	14	Ap.	12	July	$30	None
Garfield Memorial Hospital [1]	Washington	yes	yes	yes	..	yes	321	No	9	Ap.	12	July	$10 (h)	Req.
Georgetown University Hospital	Washington	yes	yes	yes	..	yes	291	No	8	Ex.	12	July	$10	Req.
George Washington University Hospital [1]	Washington	yes	yes	25	..	..	110	No	4	Ap.	12	June	$15	Req.
Providence Hospital	Washington	130	80	25	20	55	310	No	8	Ap.	12	July	$10	Req.
St. Elizabeths Hosp. [1] (Med. & Surg. Dept.)	Washington	50	150	..	..	330	530	(19)	4	Ap.	24	July & Oct.	(b)	Req.
Sibley Memorial Hospital [1]	Washington	100	30	75	14	90	309	No	6	Ap.	12	July	$25	Req.
U. S. Naval Hospital	Washington	yes	yes	..	..	yes	432	(20)	7	Both	12	July	(b)	None
Walter Reed General Hospital	Washington	465	627	21	..	..	1,113	No	14	Ap.	12	July	(b)	None
Washington Sanitarium and Hospital, [1] Takoma Park	Washington	20	133	10	..	..	163	(21)	1	Ap.	12	July	$30	Req.
FLORIDA														
Duval County Hospital	Jacksonville	yes	yes	15	24	46	185	No	6	Ap.	12	July	$30	Req.
St. Luke's Hospital	Jacksonville	yes	yes	22	6	yes	175	No	3	Ap.	12	July	$40	Req.
St. Vincent's Hospital	Jacksonville	yes	yes	40	30	..	200	No	2	Ap.	12	July	$40	Op.
James M. Jackson Memorial Hospital	Miami	yes	yes	35	20	yes	325	No	7	Ap.	12	July & Sept.	$25	Req.
Tampa Municipal Hospital	Tampa	yes	yes	yes	yes	yes	197	No	6	Ap.	12	July	$25	....
GEORGIA														
Georgia Baptist Hospital	Atlanta	80	25	20	8	20	153	No	4	Ap.	12	July	$30	None
Grady Memorial Hospital	Atlanta	60	60	30	35	55	240	No	18	Ap.	12 & 24	July	$15	Req.
Grady Memorial Hospital (col. unit)	Atlanta	78	58	28	28	38	230	No	12	Ap.	12	July	$15	Req.
Piedmont Hospital	Atlanta	yes	yes	yes	..	yes	135	No	4	Ap.	12	July	$30	None
University Hospital [1]	Augusta	yes	yes	28	16	..	257	No	8	Ap.	12	July	$10 (a)	Req.
Wesley Memorial Hospital	Emory University	yes	yes	16	..	yes	200	No	8	Ap.	12	July	$35	Req.
Macon Hospital	Macon	yes	yes	yes	yes	yes	170	No	5	Ap.	12	July	$40 (d)	Req.
ILLINOIS														
Alexian Bros. Hosp. (male patients only)	Chicago	168	96	..	..	25	289	(22)	7	Ap.	12	July	$30	Req.
American Hospital [1]	Chicago	55	55	25	15	..	150	No	4	Ap.	12	June	$25	No
Augustana Hospital	Chicago	150	50	30	25	95	350	No	13	Ap.	18-24	Jan. & July	No	Req.
Chicago Memorial Hospital	Chicago	32	32	20	4	20	108	No	4	Ap.	12	July	$25 (j)	Req.
Columbus Hospital	Chicago	50	30	23	21	35	159	No	4	Ap.	12	July	$25	None
Cook County Hospital [1]	Chicago	yes	yes	yes	yes	yes	3,300	No	99	Ex.	18	Jan. & July	No	None
Edgewater Hospital	Chicago	yes	yes	22	18	yes	140	No	5	Ap.	12	July	$25	None
Englewood Hospital	Chicago	yes	yes	22	6	..	102	No	4	Ap.	12	Jan. & July	$25	Req.
Evangelical Hospital	Chicago	52	30	60	18	40	200	No	6	Ap.	12	July	$25 (k)	None
Frances E. Willard Hospital [1]	Chicago	78	45	26	10	26	185	No	5	Ap.	12	Jan. & July	No	Req.
Garfield Park Hospital [1]	Chicago	yes	yes	yes	yes	yes	196	No	7	Ap.	12	July	No	None
Grant Hospital	Chicago	60	34	50	yes	yes	300	No	8	Ap.	12	July	No	Req.
Holy Cross Hospital	Chicago	yes	yes	yes	yes	yes	124	No	4	Ap.	12	June	$10	None
Hospital of St. Anthony de Padua	Chicago	117	40	48	15	..	220	No	6	Ap.	18	(1-c)	$10	None
Illinois Central Hospital	Chicago	yes	yes	yes	yes	yes	300	No	8	Ap.	12	(1-c)	No	Req.
Illinois Masonic Hospital	Chicago	yes	yes	25	6	yes	167	No	6	Ap.	12	July	No	Req.
Lake View Hospital [1]	Chicago	50	27	31	..	32	140	No	4	Ap.	12	July	$25	None
Lutheran Deaconess Home and Hospital	Chicago	yes	yes	yes	yes	yes	209	No	7	Ap.	12	Apr. & July	$25	None
Lutheran Memorial Hospital	Chicago	71	47	32	..	35	185	No	4	Ap.	12	July	$25	Req.
Mercy Hospital	Chicago	yes	yes	yes	yes	yes	400	No	16	Ex.	12	July	No	None
Michael Reese Hospital [1]	Chicago	32	40	36	129	119	356	(23)	32	Ap.	24	Jan. & July	No	Op.
Mother Cabrini Memorial Hospital [1]	Chicago	59	21	33	16	39	168	No	4	Ap.	12	Feb. & June	$25	None
Mount Sinai Hospital [1]	Chicago	yes	yes	44	21	44	204	No	9	Both	12	July	No	Op.
Norwegian-American Hospital	Chicago	74	49	50	12	65	250	No	7	Ap.	12	Jan. & Apr.	$20	Req.
Passavant Memorial Hospital [1]	Chicago	yes	yes	yes	yes	yes	198	No	13	Ap.	12-24	(1-d)	No	Req.
Presbyterian Hospital	Chicago	yes	yes	40	50	yes	412	No	30	Ap.	12-16	Varies	No	Req.
Provident Hospital [1] (col.)	Chicago	yes	yes	5	8	yes	65	No	6	Ap.	12	July	No	Req.
Ravenswood Hospital	Chicago	yes	yes	42	5	yes	195	No	4	Ap.	12	Varies	$25	None
Research and Educational Hospital, University of Illinois [1]	Chicago	30	37	17	14	92	190	No	12	Both	12	July	No	None
Roseland Community Hospital	Chicago	yes	yes	29	yes	24	125	No	4	Ap.	12	July	$50	None
St. Anne's Hospital	Chicago	109	56	57	22	66	310	No	7	Ap.	12	July	No	Req.
St. Bernard's Hospital	Chicago	46	82	51	21	..	200	No	8	Ap.	12	July	No	None
St. Elizabeth's Hospital	Chicago	yes	yes	yes	yes	yes	350	No	6	Ap.	12	July	$25	None
St. Joseph's Hospital	Chicago	90	50	35	25	..	200	No	7	Ap.	12	Apr. & July	No	Op.
St. Luke's Hospital	Chicago	184	72	31	yes	472	659	No	42	Ex.	12	Apr. & July	No	Req.
St. Mary of Nazareth Hospital	Chicago	122	50	38	16	24	250	No	8	Ap.	12	July	No	None
Swedish Covenant Hospital [1]	Chicago	80	55	45	..	45	225	No	6	Ap.	12	Mar.	$30	None
U. S. Marine Hospital	Chicago	35	88	..	..	27	150	(24)	5	Ap.	12	July	(b)	None
University Hospital [1]	Chicago	yes	yes	yes	yes	yes	100	No	3	Ap.	12	July	$15	Op.
University of Chicago Clinics [1]	Chicago	yes	yes	..	yes	yes	333	(25)	22	Ap.	12	(1-c)	No	Req.
Washington Boulevard Hospital	Chicago	yes	yes	yes	..	yes	110	No	6	Ap.	18	(1-e)	No	Req.
Wesley Memorial Hospital	Chicago	yes	yes	yes	yes	yes	275	No	18	Ap.	18	(1-f)	No	None
West Side Hospital [1]	Chicago	yes	yes	yes	yes	yes	197	No	6	Ap.	12	Jan. & July	No	Req.
Decatur and Macon County Hospital	Decatur	yes	yes	24	yes	yes	165	(26)	3	Ap.	12	July	$25	Op.
St. Mary's Hospital	East St. Louis	125	84	26	25	..	260	No	4	Ap.	12	July	$25 (k)	None
Evanston Hospital	Evanston	95	36	36	39	65	271	No	12	Ap.	12	(1-c)	No	Req.
St. Francis Hospital [1]	Evanston	yes	yes	81	44	40	370	No	8	Ap.	12	(1-c)	$25	None
U. S. Naval Hospital	Great Lakes	160	385	..	..	430	975	(27)	6	Both	12	June	(b)	Req.
St. Joseph's Hospital	Joliet	80	56	44	12	..	192	No	2	Ap.	12	July	$50	None
Oak Park Hospital	Oak Park	50	35	35	10	45	175	No	5	Ap.	12	July	$10	None
West Suburban Hospital	Oak Park	170	43	94	20	100	427	No	12	Ap.	12	July & Oct.	No	Req.
Rockford Hospital	Rockford	yes	yes	18	9	..	110	No	2	Ap.	12	Jan. & July	$50	None
St. Anthony's Hospital	Rock Island	70	47	20	10	3	150	No	2	Ap.	12	June & Sept.	$35	Op.
INDIANA														
St. Catherine's Hospital	East Chicago	61	55	36	32	116	300	No	3	Ap.	12	July	$25 (j)	None
Fort Wayne Lutheran Hospital	Fort Wayne	55	25	26	15	44	165	No	2	Ap.	12	July	$25 (j)	Req.
Methodist Episcopal Hospital	Fort Wayne	71	35	16	10	..	132	No	2	Ap.	12	July	$50	Req.
St. Joseph's Hospital	Fort Wayne	135	65	41	15	87	343	No	5	Ap.	12	July	$25 (j)	Req.
St. Mary's Mercy Hospital	Gary	60	96	50	15	35	256	No	4	Ap.	12	July	$25 (j)	Req.

Numerical and other references will be found on page 637.

Name of Hospital	Location	Number of Beds						Affiliated—For What Service	Internships					Dispensary Service
		Surgical	Medical	Obstetric	Pediatric	Other	Total		Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	
INDIANA—Continued														
St. Margaret's Hospital	Hammond	111	58	38	28	15	250	No	8	Ap.	12	(1-c)	$45	None
Hospitals of Indiana University [1]	Indianapolis	yes	yes	yes	yes	yes	420	(28)	17	Ap.	12	July	$12.50	Req.
Indianapolis City Hospital	Indianapolis	194	195	31	66	160	646	No	26	Ap.	12	July	$12.50	Req.
Methodist Episcopal Hospital [1]	Indianapolis	yes	yes	61	28	yes	640	No	18	Ap.	12	July	$25	None
St. Vincent's Hospital [1]	Indianapolis	198	15	35	12	35	295	No	8	Ap.	12	July	$50	None
St. Elizabeth's Hospital	La Fayette	yes	yes	20	18	yes	250	No	4	Ap.	12	July	$50	None
Epworth Hospital	South Bend	47	25	20	25	70	187	No	4	Ap.	12	July	$50	Req.
St. Joseph Hospital	South Bend	52	52	22	21	6	153	No	2	Ap.	12	July	$75	Req.
St. Anthony's Hospital [1]	Terre Haute	yes	yes	22	11	yes	169	No	3	Ap.	12	July	$50	None
IOWA														
Mercy Hospital	Cedar Rapids	yes	yes	yes	yes	yes	150	No	1	Ap.	12	Sept.	$25	Req.
St. Luke's Methodist Hospital [1]	Cedar Rapids	98	35	20	10	12	175	No	1	Ap.	12	July	$25	Req.
Jennie Edmundson Memorial Hospital	Council Bluffs	yes	yes	yes	yes	yes	135	No	3	Ap.	12	July	$50	Op.
Mercy Hospital	Council Bluffs	75	26	23	12	12	148	(29)	2	Ap.	12	June	$40	Req.
Mercy Hospital	Davenport	34	30	16	10	28	118	No	2	Ap.	12	July	$30	None
Broadlawns—Polk County Public Hospital	Des Moines	yes	yes	12	16	yes	114	No	5	Ap.	12	July	$45	Req.
Iowa Lutheran Hospital	Des Moines	70	52	..	14	..	136	(30)	4	Ap.	12	July	$50	Op.
Iowa Methodist Hospital	Des Moines	yes	yes	yes	yes	yes	279	No	6	Ap.	12	July	$50	None
Mercy Hospital	Des Moines	yes	yes	20	26	yes	171	(31)	4	Ap.	12	July	$50	None
University Hospitals [1]	Iowa City	yes	yes	yes	yes	yes	1,058	No	47	Ap.	12	July	(m)	Req.
St. Joseph's Mercy Hospital [1]	Sioux City	95	47	22	16	20	200	No	4	Ap.	12	July	...	None
KANSAS														
Bell Memorial Hospital [1]	Kansas City	yes	yes	yes	yes	yes	195	No	8	Ap.	12	July & Oct.	$25	Req.
Bethany Methodist Hospital	Kansas City	yes	yes	19	yes	25	145	No	2	Ap.	12	July	$50	Req.
St. Margaret's Hospital	Kansas City	82	64	15	30	59	250	(38)	6	Ap.	12	July	$25	None
St. Francis Hospital	Wichita	100	75	25	40	60	300	No	5	Ap.	12	July	$50	Req.
Wesley Hospital [1]	Wichita	106	36	27	40	26	235	No	5	Ap.	12	July	$50 (k)	None
KENTUCKY														
St. Elizabeth Hospital	Covington	105	192	32	24	22	375	No	4	Ap.	12	July	$30	Op.
Good Samaritan Hospital	Lexington	75	40	15	30	56	216	No	2	Ap.	12	July	$25 (k)	None
St. Joseph Hospital	Lexington	yes	yes	25	15	yes	190	No	2	Ap.	12	July	$35 (k)	None
Louisville City Hospital [1]	Louisville	120	120	40	60	75	415	No	31	Ap.	12	July	$12 (k)	Req.
St. Anthony's Hospital	Louisville	64	19	20	6	26	135	No	2	Ap.	12	July	$50	None
St. Joseph Infirmary	Louisville	135	75	28	28	60	326	No	4	Ap.	12	July	$50	None
SS. Mary and Elizabeth Hospital	Louisville	yes	yes	yes	yes	yes	145	No	2	Ap.	12	July	$40	None
LOUISIANA														
Charity Hospital [1]	New Orleans	447	329	106	157	752	1,791	No	68	Ap.	12	July	No	Req.
Flint-Goodridge Hospital (col.)	New Orleans	29	17	6	12	6	70	No	4	Ap.	12	July	$10–$25	Req.
Hotel Dieu Hospital [1]	New Orleans	yes	yes	yes	yes	yes	262	No	6	Ap.	12	July	$50	Op.
Southern Baptist Hospital [1]	New Orleans	yes	yes	yes	yes	yes	224	No	8	Ap.	12	July	$20 (a)	None
Touro Infirmary [1]	New Orleans	yes	yes	yes	yes	yes	430	No	18	Ap.	12	July	$20	Req.
U. S. Marine Hospital	New Orleans	96	76	..	..	299	471	(32)	20	Ap.	12	July	(b)	Req.
T. E. Schumpert Memorial Sanitarium	Shreveport	yes	yes	yes	yes	yes	150	No	1	Ap.	12	July	$50	None
Shreveport Charity Hospital	Shreveport	yes	yes	yes	yes	yes	400	No	8	Ap.	12	July	$10	None
MAINE														
Eastern Maine General Hospital	Bangor	yes	yes	yes	yes	yes	159	No	3	Ap.	12	July	$25–$50	Req.
Central Maine General Hospital	Lewiston	75	25	15	8	68	191	No	2	Ap.	12	July	$25	None
St. Mary General Hospital	Lewiston	39	24	12	25	51	151	No	1	Ap.	12	July	$75	Req.
Maine General Hospital	Portland	yes	yes	yes	yes	yes	204	No	4	Ap.	12	July	No	Op.
MARYLAND														
Baltimore City Hospitals	Baltimore	yes	yes	yes	yes	yes	2,044	No	20	Ap.	12	July	$25	Req.
Church Home and Infirmary	Baltimore	yes	yes	19	yes	yes	176	No	7	Ap.	12	July	$15	Req.
Franklin Square Hospital [1]	Baltimore	yes	yes	yes	yes	yes	129	No	4	Ap.	12	July	$15	Req.
Hospital for Women [1]	Baltimore	yes	yes	yes	..	..	135	(33)	5	Ap.	12	July	$15	None
Johns Hopkins Hospital [1]	Baltimore	yes	yes	yes	yes	yes	845	No	54	Both	12	(1-g)	No	....
Maryland General Hospital	Baltimore	yes	yes	24	yes	yes	240	No	8	Ap.	12	July	$10	Req.
Mercy Hospital	Baltimore	yes	yes	yes	yes	..	277	No	13	Ap.	12	July	No	Req.
Provident Hospital and Free Disp. (col.)	Baltimore	36	30	17	25	26	134	No	7	Ap.	12	Oct.	No	Req.
St. Agnes' Hospital	Baltimore	100	51	18	18	18	205	No	10	Ap.	12	July	No	Req.
St. Joseph's Hospital	Baltimore	82	45	29	20	103	279	No	13	Ap.	12	July	No	Op.
Sinai Hospital [1]	Baltimore	yes	yes	yes	yes	yes	271	No	18	Ap.	12	July	No	Req.
South Baltimore General Hospital	Baltimore	84	10	10	11	..	115	No	6	Ap.	12	July	$25	Req.
Union Memorial Hospital	Baltimore	yes	yes	21	59	..	312	No	15	Ap.	12	July	No	Req.
U. S. Marine Hospital	Baltimore	75	64	..	..	88	227	(34)	6	Ap.	12	July	(b)	Req.
University of Maryland Hospital [1]	Baltimore	93	67	22	24	57	263	No	13	Ap.	12	July	No	Req.
West Baltimore General Hospital	Baltimore	60	60	20	15	28	183	No	8	Ap.	12	July	$25	Req.
MASSACHUSETTS														
Beverly Hospital [1]	Beverly	yes	yes	yes	yes	yes	141	No	4	Ap.	14	July	$25	Req.
Beth Israel Hospital	Boston	94	71	..	25	..	190	No	10	Ex.	20	(1-h)	No	Req.
Boston City Hospital [1]	Boston	348	438	195	166	1,153	2,300	(35)	82	Ex.	12-20	Varies	No	Req.
Carney Hospital	Boston	68	75	18	23	26	210	No	13	Both	16-20	(1-d)	No	Req.
Long Island Hospital [1]	Boston	50	375	25	125	..	575	No	5	Ap.	12	July	$600 yr.	Req.
Massachusetts General Hospital [1]	Boston	200	139	..	40	26	414	No	40	Both	12-25	(1-c)	No	Req.
Massachusetts Memorial Hospitals [1]	Boston	yes	yes	91	40	yes	621	No	24	Ap.	12	July	No	Req.
New England Hospital for Women and Children,[2] Roxbury	Boston	37	15	75	38	75	240	No	6	Ap.	12	July	No	Req.
Peter Bent Brigham Hospital	Boston	94	95	..	..	58	247	No	23	Ex.	12-16½	Varies	No	Req.
St. Elizabeth's Hospital, Brighton	Boston	84	58	59	40	109	350	No	7	Ex.	21	(1-v)	No	Req.
Brockton Hospital	Brockton	yes	yes	54	yes	yes	161	No	3	Ap.	12	July	$25	Req.
Cambridge Hospital	Cambridge	yes	yes	66	75	yes	300	(36)	4	Ap.	18	(1-c)	No	Req.
U. S. Naval Hospital	Chelsea	210	250	..	..	200	660	(37)	12	Ap.	12	June	(b)	None
Fall River General Hospital	Fall River	yes	yes	22	24	yes	320	No	3	Ap.	12	(1-l)	$41	Req.
Union Hospital	Fall River	yes	yes	yes	yes	yes	176	No	2	Ap.	12	July	$30–$50	Req.
Burbank Hospital [1]	Fitchburg	yes	yes	yes	yes	yes	211	No	2	Ap.	12	July	$25	Op.
Providence Hospital	Holyoke	yes	yes	25	14	25	148	No	2	Ap.	12	July	$25	None
Lawrence General Hospital	Lawrence	yes	yes	20	24	40	147	No	2	Ap.	12	June	$10	Req.
Lowell General Hospital [1]	Lowell	yes	yes	30	14	25	189	No	1	Ex.	12	July	$25	Req.
St. John's Hospital	Lowell	yes	yes	yes	yes	yes	155	No	3	Ap.	12	June	No	Req.
Lynn Hospital	Lynn	51	30	46	30	46	203	No	4	Ex.	12	June & July	$10 (n)	Req.
St. Luke's Hospital	New Bedford	yes	yes	yes	yes	yes	330	No	4	Ap.	12	July	No	Req.
Newton Hospital	Newton	66	50	46	16	112	290	No	4	Ex.	12	June & July	No	Req.
House of Mercy Hospital	Pittsfield	25	25	32	26	82	190	No	2	Ap.	12	July	$50	Op.
Salem Hospital	Salem	yes	yes	yes	yes	yes	165	No	2	Ap.	12	July	$10	Req.

Numerical and other references will be found on page 637.

Name of Hospital	Location	Number of Beds: Surgical	Medical	Obstetric	Pediatric	Other	Total	Affiliated—For What Service	Internships: Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	Dispensary Service
MASSACHUSETTS—Continued														
Mercy Hospital	Springfield	161	50	54	35	50	350	No	4	Ap.	12	July	$25	None
Springfield Hospital	Springfield	yes	yes	..	yes	yes	192	No	4	Ap.	12	June	No	Req.
Waltham Hospital [1]	Waltham	yes	yes	52	21	39	215	No	4	Ap.	12	July	No	Req.
Memorial Hospital [1]	Worcester	yes	yes	30	24	yes	215	No	9	Ap.	18	(1-f)	No	Req.
St. Vincent Hospital	Worcester	yes	yes	yes	yes	yes	280	No	2	Ap.	12	July	$25	None
Worcester City Hospital	Worcester	110	130	34	36	90	400	No	16	Ex.	24	(1-j)	No	Req.
MICHIGAN														
St. Joseph's Mercy Hospital	Ann Arbor	yes	yes	yes	yes	yes	129	(39)	2	Ap.	12	July	$25	None
University Hospital [1]	Ann Arbor	148	105	55	160	753	1,221	(40)	30	Ap.	12	July	No	Req.
Mercy Hospital [1]	Bay City	45	22	18	40	18	143	No	3	Ap.	12	July	$50	Req.
City of Detroit Receiving Hospital	Detroit	147	165	42	38	258	650	(41)	29	Ap.	12	July	$25	Op.
Evangelical Deaconess Hospital	Detroit	59	30	20	6	20	135	(42)	3	Ap.	12	July	$25	Req.
Grace Hospital [1]	Detroit	128	88	42	78	67	403	(42)	26	Ap.	12	(1-k)	$25	Req.
Harper Hospital	Detroit	371	114	100	yes	72	657	(43)	40	Ap.	12	July	No	Op.
Henry Ford Hospital [1]	Detroit	yes	yes	34	92	48	574	No	26	Both	12	(1-g)	$125 (p)	Op.
Providence Hospital [1]	Detroit	175	100	100	200	..	575	(44)	16	Ap.	12	July	$25	None
St. Joseph Mercy Hospital [1]	Detroit	yes	yes	24	18	32	170	No	6	Ap.	12	July	$25	Req.
St. Mary's Hospital	Detroit	140	140	30	35	30	375	(45)	12	Ap.	12	July	$25	Req.
Eloise Infirmary	Eloise	yes	yes	..	..	yes	3,300	(46)	10	Ap.	12	July	$100	Op.
Hurley Hospital [1]	Flint	114	114	55	35	97	415	No	12	Ap.	12	July	$25	Req.
Blodgett Memorial Hospital [1]	Grand Rapids	yes	yes	yes	yes	yes	150	No	5	Ap.	12	July	No	Req.
Butterworth Hospital [1]	Grand Rapids	94	42	104	24	6	270	No	6	Ap.	12	July	$10	Req.
St. Mary's Hospital [1]	Grand Rapids	94	47	35	54	46	276	No	6	Ap.	12	July	$25	Req.
Highland Park General Hospital	Highland Park	yes	yes	30	16	65	195	No	7	Ap.	12	July & Sept.	$50	Req.
W. A. Foote Memorial Hospital	Jackson	yes	yes	34	8	34	175	No	3	Ap.	12	July	$50	Req.
Edward W. Sparrow Hospital [1]	Lansing	yes	yes	34	20	20	135	No	2	Ap.	12	July	$75	Req.
St. Lawrence Hospital	Lansing	27	25	28	20	28	128	(47)	2	Ap.	12	July	$50	None
Hackley Hospital [1]	Muskegon	yes	yes	17	15	24	125	No	2	Ap.	12	July	$50	None
Mercy Hospital [1]	Muskegon	25	25	25	12	37	124	(48)	2	Ap.	12	July	$50	Op.
Saginaw General Hospital	Saginaw	51	38	25	15	27	156	No	3	Ap.	12	July	$50	Req.
St. Mary's Hospital	Saginaw	98	20	20	18	20	176	No	1	Ap.	12	July	$50	None
MINNESOTA														
St. Luke's Hospital	Duluth	97	80	30	26	37	270	No	6	Ap.	12	Jan. & July	$25	Req.
St. Mary's Hospital	Duluth	84	71	30	30	75	290	No	8	Ap.	12	(1-m)	$25	Req.
Abbott Hospital [1]	Minneapolis	25	20	18	45	..	108	No	1	Ap.	12	July	$25	None
Asbury Hospital [1]	Minneapolis	68	50	25	..	25	168	(49)	3	Ap.	12	Varies	$25	None
Eitel Hospital	Minneapolis	yes	yes	yes	..	yes	125	No	3	Ap.	12	Jan. & July	$25	Op.
Fairview Hospital	Minneapolis	yes	yes	27	yes	32	225	No	4	Ap.	12	(1-n)	$25	None
Lutheran Deaconess Home and Hospital	Minneapolis	yes	yes	yes	yes	..	150	No	2	Ap.	12	Varies	$50	None
Minneapolis General Hospital [1]	Minneapolis	138	126	46	95	337	742	No	24	Ap.	12	Jan. & July	No	Req.
Northwestern Hospital [1]	Minneapolis	73	57	40	30		200	No	3	Ap.	12	Jan. & June	$25	Op.
St. Barnabas Hospital	Minneapolis	yes	yes	23	18	34	175	No	2	Ap.	12	July	$25	None
St. Mary's Hospital [1]	Minneapolis	yes	yes	30	30	..	260	No	7	Ap.	12	July	$25	Req.
Swedish Hospital	Minneapolis	yes	yes	42	20	..	332	No	7	Ap.	12	July	$25	Req.
University Hospital [1]	Minneapolis	100	100	30	80	90	400	(50)	18	Ap.	18	Jan. & July	No	Req.
Ancker Hospital	St. Paul	200	143	100	70	537	1,050	No	24	Ap.	12	July	No	Req.
Bethesda Hospital [1]	St. Paul	yes	yes	yes	10	14	110	No	2	Ap.	12	July	$25	Req.
Charles T. Miller Hospital [1]	St. Paul	90	40	21	24	41	216	(51)	8	Ap.	12	July	No	Req.
Midway Hospital	St. Paul	yes	yes	29	yes	25	128	No	1	Ap.	12	Mar.	$25	Req.
Mounds Park Sanitarium	St. Paul	34	55	10	yes	38	137	No	1	Ap.	12	July	$25	Req.
Northern Pacific Beneficial Association Hosp.	St. Paul	70	70	10	..	..	150	No	2	Ap.	12	July	$25	Req.
St. Joseph's Hospital	St. Paul	120	65	30	31	24	270	(52)	6	Ap.	12	July	$25	None
St. Luke's Hospital [1]	St. Paul	81	36	29	4	..	150	(49)	4	Ap.	12	July	$25	None
MISSOURI														
Kansas City General Hospital	Kansas City	60	88	50	24	178	400	No	24	Ap.	12	July	$25 (q)	Req.
Kansas City General Hospital No. 2 [1] (col.)	Kansas City	yes	yes	yes	yes	yes	279	(104)	12	Ap.	12	July	$20	Req.
Research Hospital	Kansas City	yes	yes	yes	yes	yes	225	No	6	Ap.	12	July	$25	None
St. Joseph Hospital	Kansas City	130	65	25	16	15	251	No	4	Ap.	12	July	$25 (j)	None
St. Luke's Hospital	Kansas City	70	56	36	43	40	245	No	7	Ap.	12	July	$25	Req.
St. Mary's Hospital	Kansas City	yes	yes	..	yes	yes	175	(53)	5	Ap.	12	July	$50	None
Trinity Lutheran Hospital	Kansas City	yes	yes	35	yes	yes	154	No	4	Ap.	12	July	$50	None
Missouri Methodist Hospital [1]	St. Joseph	110	50	15	25	..	200	No	4	Ap.	12	July	$50	Req.
St. Joseph's Hospital	St. Joseph	yes	yes	16	12	16	150	No	2	Ap.	12	July	$30	None
Alexian Bros. Hosp. (male patients only)	St. Louis	67	68	..	yes	115	250	(54)	5	Ap.	12	July	$25	Req.
Barnes Hospital	St. Louis	102	68	..	..	100	270	(55)	32	Ap.	12-18	Jan. & July	No	Op.
Christian Hospital	St. Louis	40	35	25	10	25	135	No	3	Ap.	12	July	$50	Req.
De Paul Hospital	St. Louis	yes	yes	35	30	..	285	No	7	Ap.	12	July	$25	Req.
Evangelical Deaconess Home and Hospital [1]	St. Louis	60	30	20	15	15	140	No	4	Ap.	12	July & Aug.	$25 (k)	None
Jewish Hospital	St. Louis	yes	yes	33	24	33	301	(56)	11	Ap.	12	July	$20	Op.
Lutheran Hospital [1]	St. Louis	yes	yes	36	yes	yes	156	No	4	Ap.	12	July	$25 (j)	None
Missouri Baptist Hospital	St. Louis	yes	yes	yes	yes	yes	399	No	10	Ap.	12	July	$25	None
St. Anthony's Hospital	St. Louis	88	50	46	16	..	200	No	6	Ap.	12	July	$25	None
St. John's Hospital	St. Louis	113	113	35	39	..	300	No	12	Ap.	12	July	$20	Req.
St. Louis City Hospital	St. Louis	230	290	66	65	309	960	No	70	Ap.	12	July	$10 (r)	None
St. Louis City Hospital No. 2 (col.)	St. Louis	100	120	53	50	127	450	No	15	Ap.	12	July	$10 (r)	Req.
St. Luke's Hospital	St. Louis	yes	yes	24	yes	yes	210	No	10	Ap.	12	July	$25	Req.
St. Mary's Group of Hospitals	St. Louis	135	100	50	20	290	595	(105)	20	Ap.	12	July	No	Req.
MONTANA														
Murray Hospital	Butte	65	30	25	yes	6	126	No	2	Ap.	12	Jan. & July	$50	Req.
St. James Hospital	Butte	75	64	13	yes	13	165	No	2	Ap.	12	July	$60	Req.
NEBRASKA														
St. Francis Hospital [1]	Grand Island	32	48	15	15	25	135	No	2	Ap.	12	July	$50	None
Lincoln General Hospital [1]	Lincoln	47	35	22	31	22	157	No	2	Ap.	12	July	$50	Op.
St. Elizabeth's Hospital	Lincoln	yes	yes	yes	yes	yes	200	No	2	Ap.	12	July	$50	None
Bishop Clarkson Memorial Hospital	Omaha	yes	yes	12	20	yes	106	No	3	Ap.	12	June	$25	None
Creighton Memorial St. Joseph's Hospital [1]	Omaha	156	122	43	32	47	400	No	10	Ap.	12	July	$25	Req.
Evangelical Covenant Hospital	Omaha	25	22	16	18	26	107	No	3	Ap.	12	June	$50	Req.
Immanuel Deaconess Institute	Omaha	30	30	18	12	46	136	No	4	Ap.	12	Feb. & June	$40	None
Nebraska Methodist Episcopal Hospital	Omaha	yes	yes	yes	yes	yes	225	No	6	Ap.	12	July	$25	None
St. Catherine's Hospital	Omaha	yes	yes	34	10	yes	173	No	5	Ap.	12	July	$25	None
University of Nebraska Hospital [1]	Omaha	75	56	18	33	..	182	No	12	Ap.	12	July	$25	Req.
NEW HAMPSHIRE														
Mary Hitchcock Memorial Hospital [1]	Hanover	yes	yes	28	12	8	140	No	4	Ap.	12	Jan. & July	(s)	Req.

Numerical and other references will be found on page 637.

Name of Hospital	Location	Number of Beds						Affiliated—For What Service	Internships					Dispensary Service
		Surgical	Medical	Obstetric	Pediatric	Other	Total		Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	
NEW JERSEY														
Atlantic City Hospital	Atlantic City	yes	yes	yes	yes	yes	325	(57)	9	Ap.	12	July	$25	Req.
Bayonne Hospital and Dispensary	Bayonne	32	36	26	65	61	220	No	6	Ap.	15	(1-p)	$25	Req.
Cooper Hospital	Camden	63	34	48	40	147	332	No	8	Ap.	12	July	$10 (k)	Req.
West Jersey Homeopathic Hospital	Camden	75	46	68	55	23	267	No	8	Ap.	12	July	$41.07	Req.
Alexian Bros. Hosp. (male patients only)	Elizabeth	50	123	..	7	..	180	(106)	2	Ap.	12	June	$75	Req.
Elizabeth General Hospital and Dispensary	Elizabeth	70	41	32	10	77	230	No	7	Ex.	12	July	$25	None
St. Elizabeth Hospital	Elizabeth	100	50	50	20	40	260	No	4	Ap.	12	July	$25	Req.
Englewood Hospital [1]	Englewood	50	24	36	30	57	197	No	8	Ap.	12	July	$25	Req.
Hackensack Hospital [1]	Hackensack	86	65	30	30	14	225	No	6	Ap.	12	July	$25	Req.
St. Mary Hospital [1]	Hoboken	180	124	14	40	67	425	No	8	Ap.	12	July	$25	Req.
Jersey City Hospital [1]	Jersey City	125	175	62	83	155	600	No	38	Ex.	12-24	Jan. & July	No	Req.
St. Francis Hospital	Jersey City	129	56	15	38	12	250	No	6	Ap.	12	July	$25	Req.
Monmouth Memorial Hospital	Long Branch	60	30	20	15	84	209	No	4	Ap.	12	July	$25	Req.
Mountainside Hospital [1]	Montclair	34	32	37	32	110	245	No	7	Ap.	12	July	$25	Req.
Morristown Memorial Hospital	Morristown	yes	yes	yes	yes	yes	174	No	4	Ap.	12	(1-q)	$50	Req.
Hospital of St. Barnabas	Newark	yes	yes	17	12	yes	138	No	3	Ap.	12	July	$50	Req.
Newark Beth Israel Hospital	Newark	yes	yes	yes	yes	yes	376	No	12	Ap.	18	Varies	$100 yr.	Op.
Newark City Hospital [1]	Newark	273	217	56	90	64	700	No	21	Both	21	(1-e)	No	None
Newark Memorial Hospital	Newark	yes	yes	27	28	34	165	No	3	Ap.	12	July	$25	Req.
St. James' Hospital [1]	Newark	52	20	15	20	18	125	No	3	Ap.	12	July	$50	Req.
St. Michael's Hospital	Newark	109	98	..	25	78	310	(58)	7	Ap.	12	July	$30	Req.
Orange Memorial Hospital	Orange	yes	yes	yes	yes	yes	388	No	7	Ap.	12	July	$25	Req.
Passaic General Hospital [1]	Passaic	60	36	22	30	52	200	No	3	Ap.	12	(1-i)	$50	Req.
St. Mary's Hospital	Passaic	71	54	36	24	20	205	No	2	Ap.	12	July	$50	Op.
Nathan and Miriam Barnert Memorial Hosp.	Paterson	58	12	16	14	10	110	No	4	Ap.	12	July	(t)	Req.
Paterson General Hospital [1]	Paterson	60	37	40	71	100	308	No	5	Ex.	12	July	$50	Op.
St. Joseph's Hospital [1]	Paterson	149	92	52	22	85	400	No	6	Ap.	12	July	$25	Req.
Muhlenberg Hospital	Plainfield	90	75	35	40	35	275	No	5	Ap.	12	July	$25	Req.
Holy Name Hospital	Teaneck	yes	yes	yes	yes	yes	200	No	5	Ap.	12	July	$50	Req.
Mercer Hospital	Trenton	52	31	74	12	41	210	No	4	Ap.	12	July	$33.33	Req.
St. Francis Hospital	Trenton	150	65	64	28	..	307	No	8	Ap.	12	July	$25	Req.
William McKinley Memorial Hospital	Trenton	36	40	22	8	40	146	No	3	Ap.	12	June	$50	Req.
North Hudson Hospital	Weehawken	yes	yes	29	28	yes	189	No	8	Ap.	24	July	$25	Req.
NEW YORK														
Albany Hospital [1]	Albany	200	75	35	17	146	473	No	16	Ap.	12	July	No	Req.
Memorial Hospital	Albany	92	18	15	yes	15	140	No	5	Ap.	12	July	$50	Req.
St. Peter's Hospital [1]	Albany	73	61	..	10	4	148	(70)	4	Ap.	12	July	$40	Req.
Auburn City Hospital [1]	Auburn	yes	yes	44	21	5	155	No	2	Ap.	12	July	$50	Req.
Binghamton City Hospital [1]	Binghamton	80	69	38	48	209	444	No	6	Ap.	12	July	$50	None
Beth Moses Hospital	Brooklyn	96	45	34	18	30	223	No	14	Ex.	24	Jan. & July	No	Op.
Brooklyn Hospital	Brooklyn	94	52	78	..	70	294	No	14	Ex.	24	July	No	Op.
Brownsville and East New York Hospital	Brooklyn	yes	yes	yes	yes	yes	244	No	12	Ex.	18	Jan. & July	No	Req.
Coney Island Hospital [1]	Brooklyn	150	56	28	36	30	300	No	16	Ex.	18	July	No	Req.
Cumberland Hospital	Brooklyn	75	62	33	62	89	321	No	24	Ex.	24	July	No	Req.
Greenpoint Hospital	Brooklyn	98	61	62	36	43	300	No	14	Ex.	24	July	No	....
Jewish Hospital [1]	Brooklyn	200	178	175	46	58	657	(59)	45	Ap.	30	Jan. & July	No	Req.
Kings County Hospital	Brooklyn	323	497	131	50	659	1,660	No	36	Ap.	18	(1-r)	No	....
Long Island College Hospital	Brooklyn	206	61	30	36	147	480	(60)	35	Ap.	12	July	No	Req.
Methodist Episcopal Hospital	Brooklyn	134	55	100	16	110	415	No	12	Ap.	24	July	No	None
Norwegian Lutheran Deaconess Home and Hospital [1]	Brooklyn	yes	yes	yes	yes	yes	202	No	8	Ap.	24	July	No	None
St. Catherine's Hospital	Brooklyn	94	119	83	..	..	296	No	12	Ap.	24	July	No	None
St. John's Hospital	Brooklyn	50	43	21	26	94	234	(61)	10	Ap.	24	July	$25	Req.
St. Mary's Hospital	Brooklyn	111	80	42	32	42	307	No	10	Ap.	24	July	No	Op.
St. Peter's Hospital [1]	Brooklyn	147	75	..	..	28	250	No	6	Ap.	12	July	No	None
United Israel-Zion Hospital	Brooklyn	100	59	92	26	144	421	No	19	Ex.	24	Jan. & June	No	None
U. S. Naval Hospital	Brooklyn	528	542	..	..	..	1,070	(62)	12	Both	12	July	(b)	None
Wyckoff Heights Hospital	Brooklyn	90	55	16	18	21	200	No	11	Ex.	18	Jan. & July	No	Req.
Buffalo and Emergency Hospitals of the Sisters of Charity	Buffalo	yes	yes	yes	yes	yes	336	(63)	4	Ex.	12	July	$25	Req.
Buffalo City Hospital [1]	Buffalo	94	94	38	24	613	863	No	12	Ap.	12	July	$60 (p)	Req.
Buffalo General Hospital	Buffalo	94	62	26	30	194	406	No	14	Ap.	12	July	No	Req.
Deaconess Hospital	Buffalo	yes	yes	36	21	43	225	No	6	Ap.	12	July	$25	None
Millard Fillmore Hospital	Buffalo	65	171	65	..	..	301	No	7	Ap.	12	July	$25 (j)	Req.
Clifton Springs Sanitarium and Clinic [1]	Clifton Springs	48	440	12	..	..	500	No	3	Ap.	12	July	$25	Req.
Arnot Ogden Memorial Hospital	Elmira	33	29	25	31	92	210	No	2	Ap.	12	July	$25 (j)	Req.
St. Joseph's Hospital	Elmira	60	58	27	20	27	192	No	2	Ap.	12	July	$50	Req.
Ideal Hospital [1]	Endicott	43	25	26	8	30	132	No	1	Ap.	12	July	$75	None
Flushing Hospital and Dispensary [1]	Flushing	56	26	47	39	75	243	No	6	Ap.	18	(1-c)	$50	Req.
Mary Immaculate Hospital	Jamaica	73	54	26	16	131	300	No	10	Ap.	24	July	No	None
Charles S. Wilson Memorial Hospital	Johnson City	65	48	25	31	24	193	No	2	Ap.	12	July	$50	None
St. John's Long Island City Hospital	Long Island City	128	52	79	21	..	280	No	14	Ap.	24	July	No	Req.
Nassau Hospital	Mineola	40	20	29	30	86	205	No	6	Ap.	18	Jan. & July	$50	None
Mount Vernon Hospital	Mount Vernon	42	29	34	3	34	142	No	4	Ex.	12	Jan. & July	(u)	Op.
New Rochelle Hospital	New Rochelle	yes	yes	53	13	yes	147	No	6	Ap.	12	July	$35	Req.
Bellevue Hospital [1]	New York	340	363	156	179	1,091	2,129	No	135	Ex.	12-24	Jan. & July	No	Req.
Beth David Hospital [1]	New York	34	16	12	14	52	128	No	6	Ex.	12	July	$25	Req.
Beth Israel Hospital [1]	New York	yes	yes	36	45	40	354	(64)	24	Both	12-24	(1-e)	No	Req.
Fifth Avenue Hospital [1]	New York	104	52	33	72	40	301	No	9	Ap.	12-15	(1-e)	No	Req.
Fordham Hospital	New York	140	68	27	27	116	378	No	15	Ap.	20	(1-h)	No	None
French Hospital	New York	yes	yes	..	..	..	204	No	10	Ap.	12-24	(1-b)	No	Req.
Gouverneur Hospital [1]	New York	80	60	19	30	29	218	No	16	Ex.	12	July	No	None
Harlem Hospital [1]	New York	63	83	40	56	83	325	No	28	Both	24	Jan. & July	No	None
Hospital for Joint Diseases [1]	New York	30	30	..	10	281	351	(64)	13	Ex.	24	Jan. & July	$25	Req.
Knickerbocker Hospital	New York	30	26	24	11	110	201	No	8	Both	24	Jan. & July	No	None
Lebanon Hospital	New York	51	45	18	20	58	192	No	11	Both	20-28	(1-s)	No	Req.
Lenox Hill Hospital	New York	71	48	26	62	124	331	No	17	Ex.	24	Feb. & Aug.	(v)	Op.
Lincoln Hospital	New York	160	180	89	..	..	429	No	20	Ex.	24	Jan. & July	No	Req.
Metropolitan Hospital [1]	New York	190	366	80	314	670	1,620	No	36	Ex.	12	July	No	Req.
Montefiore Hospital for Chronic Diseases [1]	New York	yes	yes	..	yes	yes	845	No	12	Ap.	12	(1-e)	$25	Req.
Morrisania City Hospital [1]	New York	153	155	130	68	..	506	No	32	Both	24	Jan. & July	No	Req.
Mount Sinai Hospital [1]	New York	152	146	..	52	326	676	No	49	Ex.	30	Jan. & July	No	Op.
New York City Hospital	New York	148	306	46	64	496	1,060	No	32	Ex.	24	Jan. & July	No	Op.
New York Homeopathic Medical College and Flower Hospital [1]	New York	yes	yes	32	19	32	220	No	12	Ex.	12	July	(m)	Req.
New York Hospital [1]	New York	87	100	..	32	79	298	No	22	Both	24	Jan. & July	No	Req.
New York Infirmary for Women and Children [2]	New York	40	30	43	21	25	159	No	7	Ap.	12	(1-t)	$10	None
New York Polyclinic Medical School and Hospital	New York	80	38	32	15	122	287	No	8	Ap.	24	(1-e)	No	Req.

Numerical and other references will be found on page 637.

Name of Hospital	Location	Number of Beds						Internships					
		Surgical	Medical	Obstetric	Pediatric	Other	Total	Affiliated—For What Service	Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	Dispensary Service
NEW YORK—Continued														
New York Postgraduate Medical School and Hospital	New York	152	50	..	60	164	426	No	32	Ex.	12-28	Varies	No	None
Presbyterian Hospital [1]	New York	yes	yes	..	yes	yes	732	No	51	Ex.	25	(1-s)	No	Req.
Roosevelt Hospital	New York	137	80	..	20	154	391	No	19	Ex.	24	Jan. & July	No	Op.
St. Francis Hospital	New York	280	145	..	..	..	425	No	8	Ap.	24	Jan. & July	No	None
St. Luke's Hospital [1]	New York	216	216	..	40	54	526	No	22	Both	12-24	Jan. & July	No	None
St. Vincent's Hospital	New York	210	138	..	..	22	370	No	20	Ex.	24	Jan. & July	No	....
Sydenham Hospital [1]	New York	39	35	14	19	93	200	No	8	Ex.	21	(1-c)	No	None
U. S. Marine Hospital (Ellis Island)	New York	89	158	..	8	336	591	(65)	2	Ap.	12	July	(b)	Req.
United Hospital [1]	Port Chester	yes	yes	yes	yes	yes	200	No	3	Ap.	12	July	$75	Req.
Vassar Brothers Hospital	Poughkeepsie	75	55	34	12	28	204	No	4	Ap.	12	July	$30 (a)	Req.
Genesee Hospital	Rochester	yes	yes	31	25	yes	230	No	6	Ap.	12	July	$25	Req.
Highland Hospital	Rochester	yes	yes	48	10	58	258	No	4	Ap.	12	July	$25	Req.
Rochester General Hospital	Rochester	100	40	40	13	112	305	No	8	Ap.	12	July	$25	Req.
St. Mary's Hospital	Rochester	72	57	20	30	27	206	No	6	Ap.	12	July	$25 (w)	Req.
Strong Memorial Hospital [1]	Rochester	64	64	15	47	106	296	(66)	26	Ap.	12	July	No	Req.
Ellis Hospital [1]	Schenectady	160	22	36	28	39	285	(67)	7	Ap.	12	Aug.	$50	Req.
St. Vincent's Hospital	Staten Island	85	60	35	20	..	200	No	5	Both	12-18	Jan. & July	No	Req.
Staten Island Hospital	Staten Island	88	70	55	18	44	275	No	6	Ap.	18	(1-c)	No	Req.
U. S. Marine Hospital	Staten Island	207	105	..	..	..	312	(68)	8	Ap.	12	July	(b)	None
General Hospital of Syracuse	Syracuse	yes	yes	27	..	25	110	No	2	Ap.	12	July	$25	Req.
Hospital of the Good Shepherd, Syracuse University	Syracuse	yes	yes	57	39	27	265	(69)	8	Ap.	12	July	No	Req.
St. Joseph Hospital [1]	Syracuse	107	41	29	23	31	231	No	4	Ap.	12	July	$25	None
Syracuse Memorial Hospital [1]	Syracuse	yes	yes	80	48	..	250	No	6	Ap.	12	July	No	None
Samaritan Hospital	Troy	62	38	7	18	56	181	No	3	Ap.	12	(1-g)	$30	Req.
Troy Hospital [1]	Troy	124	92	4	30	12	262	(70)	4	Ap.	12	July	$40	Op.
Grasslands Hospital [1]	Valhalla	115	149	15	50	254	583	No	15	Ap.	18	Jan. & July	(x)	Req.
St. John's Riverside Hospital	Yonkers	52	28	24	20	64	188	No	5	Ap.	15	Varies	$30	Req.
St. Joseph's Hospital	Yonkers	46	25	14	10	25	120	No	4	Ap.	12	July	$25 (j)	Req.
NORTH CAROLINA														
Duke Hospital [1]	Durham	yes	yes	yes	yes	yes	466	No	8	Ap.	12	(1-c)	No	....
Lincoln Hospital [1] (col.)	Durham	yes	yes	18	12	1	108	No	3	Ap.	12	(1-l)	$5 (y)	Req.
Watts Hospital	Durham	94	40	24	28	24	210	No	3	Ap.	12	July	$50 (k)	Req.
L. Richardson Memorial Hospital [1] (col.)	Greensboro	20	15	5	10	14	64	No	2	Ap.	12	July & Oct.	$10	Req.
Rex Hospital	Raleigh	yes	yes	31	20	yes	125	No	1	Ap.	12	July	$25 (j)	Req.
St. Agnes' Hospital (col.)	Raleigh	54	16	10	10	10	100	No	3	Ap.	12	(1-k)	No	Req.
Park View Hospital [1]	Rocky Mount	yes	yes	yes	yes	yes	100	No	2	Ap.	12	June	$40	None
James Walker Memorial Hospital	Wilmington	yes	yes	17	16	20	150	No	4	Ap.	12	July	$25 (j)	Req.
City Memorial Hospital	Winston-Salem	yes	yes	yes	yes	yes	240	No	5	Ap.	12	July	$25	Req.
NORTH DAKOTA														
Bismarck Hospital	Bismarck	yes	yes	14	yes	12	140	No	2	Ap.	12	July	$50	Req.
St. John's Hospital [1]	Fargo	108	40	37	15	..	200	No	2	Ap.	12	July	$50	None
OHIO														
City Hospital	Akron	164	55	38	..	93	350	(71)	12	Ap.	12	July	$25	Req.
St. Thomas Hospital	Akron	75	48	29	30	2	184	No	3	Ap.	12	July	$25	None
Mercy Hospital	Canton	yes	yes	yes	yes	yes	225	No	2	Ap.	12	July	$25	None
Bethesda Hospital [1]	Cincinnati	100	60	60	27	60	307	No	7	Ap.	12	July	$25 (h)	Req.
Christ Hospital [1]	Cincinnati	78	42	33	..	65	218	(72)	5	Ap.	12	July	$25	Req.
Cincinnati General Hospital [1]	Cincinnati	235	230	100	50	235	850	(73)	30	Ap.	12	July	No	Req.
Deaconess Hospital [1]	Cincinnati	81	38	25	yes	31	175	No	4	Ap.	12	July	$25 (k)	Req.
Good Samaritan Hospital	Cincinnati	220	83	66	46	135	550	No	13	Ap.	12	July	$25	Req.
Jewish Hospital	Cincinnati	yes	yes	yes	yes	yes	288	No	4	Ap.	12	July	$25	None
St. Mary Hospital	Cincinnati	111	62	..	30	..	203	(74)	4	Ap.	12	July	$50	Req.
Charity Hospital	Cleveland	196	72	..	35	..	303	(75)	12	Ap.	12	July	No	Req.
City Hospital [1]	Cleveland	160	125	50	80	1,025	1,440	No	24	Ap.	12	July	No	Req.
Lakeside Hospital [1]	Cleveland	120	100	..	..	yes	379	No	30	Ap.	12-18	(1-c)	No	Req.
Mount Sinai Hospital [1]	Cleveland	44	44	45	22	117	272	(76)	12	Ap.	12	July	$10 (r)	Req.
St. Alexis Hospital	Cleveland	108	53	..	26	33	220	(77)	8	Ap.	12	July	$25	Req.
St. John's Hospital	Cleveland	82	50	28	22	34	216	No	6	Ap.	12	July	$20 (a)	Req.
St. Luke's Hospital	Cleveland	128	88	62	40	77	395	No	15	Ap.	12	July	(k)	Req.
Woman's Hospital [1]	Cleveland	24	18	31	12	35	120	No	3	Ap.	12	July	$50	None
Grant Hospital [1]	Columbus	160	40	30	40	60	330	No	8	Ap.	12	June & July	$25 (j)	None
Mt. Carmel Hospital	Columbus	159	30	25	yes	25	239	No	4	Ap.	12	July	$25 (j)	None
St. Francis Hospital	Columbus	100	50	..	..	..	150	(77)	6	Both	12	July	$200 yr.	None
Starling-Loving University Hospital [1]	Columbus	104	52	22	32	38	248	No	9	Ap.	12	July	$200 yr.	Req.
White Cross Hospital [1]	Columbus	143	52	30	28	25	278	No	8	Ex.	12	July	$25 (z)	Req.
Miami Valley Hospital	Dayton	yes	yes	88	15	48	396	No	8	Ap.	12	July	$25	Req.
St. Elizabeth Hospital	Dayton	72	198	35	20	95	420	No	4	Ap.	12	July	$25	None
Elyria Memorial Hospital	Elyria	36	17	29	..	72	154	No	1	Ap.	12	July	$50	None
Mercy Hospital [1]	Hamilton	65	66	45	34	40	250	No	2	Ap.	12	July	$25 (j)	Req.
Springfield City Hospital	Springfield	yes	yes	35	10	yes	150	No	4	Ap.	12	July	$50	Req.
Flower Hospital	Toledo	40	30	40	20	20	150	No	4	Ap.	12	July	$50	None
Lucas County Hospitals	Toledo	43	87	10	10	247	397	No	8	Ap.	12	July	$50	Req.
Mercy Hospital	Toledo	40	31	18	12	18	119	No	3	Ap.	12	July	$50	None
St. Vincent's Hospital	Toledo	171	68	45	58	45	387	No	11	Ap.	12	July	$25 (o)	Req.
Toledo Hospital	Toledo	79	78	50	24	44	275	No	5	Ap.	12	July	$50	None
Youngstown Hospital	Youngstown	yes	yes	74	yes	yes	450	(78)	15	Ap.	12	July	$25	Req.
OKLAHOMA														
St. Anthony Hospital	Oklahoma City	yes	yes	yes	yes	yes	320	No	8	Ap.	12	July	$25 (o)	Req.
State University Hospitals [1]	Oklahoma City	68	48	11	50	270	447	No	12	Ap.	12	July	$10 (k)	Req.
Wesley Hospital	Oklahoma City	yes	yes	yes	yes	yes	150	No	3	Ap.	12	July	$50	None
Morningside Hospital	Tulsa	yes	yes	28	20	12	225	No	4	Ap.	12	July	$25 (k)	Req.
St. John's Hospital	Tulsa	110	75	40	25	..	250	No	4	Ap.	12	July	$25 (o)	Req.
OREGON														
Emanuel Hospital	Portland	108	43	66	yes	66	283	(79)	5	Ap.	12	July	$20	Req.
Good Samaritan Hospital [1]	Portland	yes	yes	24	21	yes	328	No	8	Ap.	12	July	$20	None
Multnomah County Hospital [1]	Portland	70	90	24	25	86	295	(80)	14	Ap.	12	July	$20	Req.
Portland Sanitarium [1]	Portland	yes	yes	24	15	22	142	No	3	Ap.	12	July	$75 (p)	None
St. Vincent's Hospital [1]	Portland	218	100	36	12	36	402	No	10	Ap.	12	July	$20	None
PENNSYLVANIA														
Abington Memorial Hospital [1]	Abington	yes	yes	32	26	32	231	No	6	Ap.	12	July	$25	None
Allentown Hospital [1]	Allentown	73	58	27	42	125	325	No	8	Ap.	12	June	No	Req.
Sacred Heart Hospital	Allentown	84	40	16	55	95	290	(81)	5	Ap.	12	July	No	Req.

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Name of Hospital	Location	Number of Beds						Internships					
		Surgical	Medical	Obstetric	Pediatric	Other	Total	Affiliated—For What Service	Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	Dispensary Service
PENNSYLVANIA—Continued														
Altoona Hospital [1]	Altoona	67	40	18	17	38	180	No	5	Ap.	12	July	$25	Req.
Mercy Hospital [1]	Altoona	yes	yes	yes	yes	yes	135	No	4	Ap.	12	July	$25	Req.
St. Luke's Hospital	Bethlehem	72	47	20	yes	67	206	No	6	Ap.	12	July	$20 (aa)	Req.
Braddock General Hospital [1]	Braddock	yes	yes	yes	yes	yes	137	No	4	Ap.	12	July	$25	Req.
Bryn Mawr Hospital	Bryn Mawr	98	80	48	25	16	267	No	9	Ap.	12	July	$25	Req.
Chester Hospital [1]	Chester	121	71	19	29	45	285	No	5	Ap.	12	July	$20	Req.
G. F. Geisinger Memorial Hospital	Danville	yes	yes	16	18	12	192	No	8	Ap.	12	July	No	Req.
Hamot Hospital	Erie	43	24	54	20	69	210	No	6	Ap.	12	July	$50	Req.
St. Vincent's Hospital	Erie	yes	yes	54	36	yes	214	No	8	Ap.	12	July	$25	Req.
Westmoreland Hospital	Greensburg	42	24	16	8	70	160	No	4	Ap.	12	July	$50	Req.
Harrisburg Hospital [1]	Harrisburg	yes	yes	25	16	yes	239	No	8	Ap.	12	July	$25	Req.
Harrisburg Polyclinic Hospital [1]	Harrisburg	yes	yes	yes	yes	yes	182	No	4	Ap.	12	July	$50	Req.
Conemaugh Valley Memorial Hospital	Johnstown	yes	yes	30	yes	yes	290	No	7	Ap.	12	July	$25	Op.
Lancaster General Hospital [1]	Lancaster	108	45	55	26	39	273	No	6	Ap.	12	July	$25	Req.
McKeesport Hospital	McKeesport	56	41	40	21	105	263	No	6	Ap.	12	July	$25	Req.
Montgomery Hospital	Norristown	44	31	20	10	20	125	No	3	Ap.	12	July	$25 (j)	Req.
Chestnut Hill Hospital	Philadelphia	23	23	36	10	20	112	No	4	Ap.	12	July	$50	Req.
Frankford Hospital	Philadelphia	57	24	23	15	23	142	No	6	Ap.	12	July	$20	Req.
Frederick Douglass Memorial Hosp. [1] (col.)	Philadelphia	15	15	8	12	21	81	No	3	Ap.	12	June	No	Req.
Germantown Dispensary and Hospital	Philadelphia	yes	yes	50	38	60	360	No	9	Ap.	18	Jan. & July	No	Req.
Graduate Hospital of the University of Pennsylvania	Philadelphia	108	101	45	49	194	497	No	20	Ex.	24	July	No	Req.
Hahnemann Medical College Hospital	Philadelphia	109	78	101	43	446	777	No	18	Ap.	12	July	No	Req.
Hospital of the Protestant Episcopal Church	Philadelphia	192	198	..	50	10	450	(82)	16	Ap.	24	July & Aug.	No	Req.
Hospital of the University of Pennsylvania [1]	Philadelphia	112	97	61	37	258	565	No	28	Both	24	July	No	Req.
Hospital of the Woman's Medical College [2]	Philadelphia	yes	yes	36	36	yes	171	No	6	Ap.	12	July & Sept.	No	Req.
Jefferson Medical College Hospital	Philadelphia	71	76	34	48	459	688	No	28	Both	24	June	No	Req.
Jewish Hospital [1]	Philadelphia	71	49	54	22	230	426	No	16	Both	24	June	No	Req.
Lankenau Hospital	Philadelphia	141	72	30	..	55	298	No	8	Ap.	24	(1-e)	No	Req.
Memorial Hospital	Philadelphia	32	21	12	12	73	150	No	4	Ap.	12	July	$25	Req.
Mercy Hospital [1] (col.)	Philadelphia	24	20	15	14	27	100	No	5	Ap.	12	July	$10	Req.
Methodist Episcopal Hospital	Philadelphia	yes	yes	yes	yes	yes	300	No	8	Ex.	12	July	No	Req.
Misericordia Hospital [1]	Philadelphia	96	86	36	30	38	286	No	9	Ap.	12	July	(bb)	Req.
Mount Sinai Hospital [1]	Philadelphia	yes	yes	yes	yes	yes	316	No	14	Ex.	12	June	No	Op.
Northeastern Hospital	Philadelphia	yes	yes	15	25	12	102	No	3	Ap.	12	July	$50	Req.
Pennsylvania Hospital	Philadelphia	92	113	150	..	223	578	No	24	Ap.	24	Jan. & July	No	Req.
Philadelphia General Hospital [1]	Philadelphia	430	460	80	80	1,000	2,050	(83)	60	Both	24	July	No	Op.
Presbyterian Hospital	Philadelphia	yes	yes	41	24	57	324	No	11	Both	24	July	No	Req.
St. Agnes Hospital	Philadelphia	164	105	46	28	3	346	No	10	Ap.	12	July	No	Req.
St. Joseph's Hospital	Philadelphia	71	55	45	25	74	270	(84)	8	Ap.	12	July	No	None
St. Luke's and Children's Homeopathic Hospitals [1]	Philadelphia	78	40	58	66	58	300	No	6	Ap.	12	July	$50	Req.
St. Mary's Hospital [1]	Philadelphia	107	38	40	25	42	252	No	8	Ap.	12	July	No	Req.
Temple University Hospital [1]	Philadelphia	yes	yes	67	31	yes	358	(85)	14	Both	24	June	No	Req.
U. S. Naval Hospital	Philadelphia	150	290	..	..	289	729	(86)	10	Both	12	July	(b)	None
Woman's Hospital [2]	Philadelphia	44	27	40	19	40	170	No	6	Ap.	12	July & Aug.	$30 yr.	Req.
Women's Homeopathic Hospital [1]	Philadelphia	32	30	60	28	50	200	No	4	Ex.	12	July	$20	Op.
Allegheny General Hospital [1]	Pittsburgh	145	59	18	58	125	405	No	12	Ap.	12	July	No	Req.
Homeopathic Medical and Surgical Hospital and Dispensary [1]	Pittsburgh	45	40	32	50	145	312	No	8	Ap.	12	July	No	Req.
Mercy Hospital [1]	Pittsburgh	yes	yes	yes	yes	yes	670	(87)	22	Ap.	12	July	No	Req.
Montefiore Hospital [1]	Pittsburgh	yes	yes	31	23	yes	225	No	7	Ap.	12	July	$20	Req.
Passavant Hospital [1]	Pittsburgh	50	50	31	15	8	154	No	6	Ap.	12	July	$250 yr.	....
Pittsburgh Hospital [1]	Pittsburgh	yes	yes	25	16	yes	200	No	5	Ap.	12	July	$25	Req.
Presbyterian Hospital [1]	Pittsburgh	yes	yes	yes	yes	yes	197	(88)	7	Ap.	12	July	No	Req.
St. Francis Hospital [1]	Pittsburgh	158	178	29	40	250	655	(87)	16	Ap.	12	July	No	Req.
St. John's General Hospital	Pittsburgh	77	51	19	33	22	202	No	5	Ap.	12	July	$25	Req.
St. Joseph's Hospital	Pittsburgh	42	34	8	18	38	140	No	5	Ap.	12	July	No	Req.
St. Margaret Memorial Hospital [1]	Pittsburgh	42	42	42	26	21	173	No	4	Ap.	12	July	$25	Req.
South Side Hospital [1]	Pittsburgh	50	35	10	25	118	238	No	7	Ap.	12	July	No	Req.
Western Pennsylvania Hospital [1]	Pittsburgh	243	174	55	47	132	651	No	20	Ap.	12	July	No	Req.
Pottsville Hospital [1]	Pottsville	56	38	14	14	18	140	No	4	Ap.	12	July	$25	Req.
Reading Hospital	Reading	107	61	42	36	39	285	No	7	Ap.	12	July	No	Req.
St. Joseph's Hospital	Reading	73	34	25	18	55	205	No	6	Ap.	12	July	$25	Req.
Robert Packer Hospital	Sayre	yes	yes	yes	yes	yes	275	No	6	Ap.	12	July	No	Req.
Hahnemann Hospital [1]	Scranton	24	24	15	12	50	125	No	4	Ap.	12	July	$15	Req.
Moses Taylor Hospital	Scranton	46	26	..	12	16	100	(89)	4	Ap.	12	July	$30	Req.
Scranton State Hospital	Scranton	60	40	6	26	56	188	No	6	Ap.	12	July	$8.33	Req.
Uniontown Hospital	Uniontown	121	58	19	27	..	225	No	6	Ap.	12	July	$25	Req.
Washington Hospital	Washington	58	28	38	27	15	166	No	5	Ap.	12	July	$50	Req.
Chester County Hospital	West Chester	18	17	17	18	67	137	No	4	Ap.	12	July	$50	Req.
Mercy Hospital [1]	Wilkes-Barre	47	46	20	35	72	220	No	5	Ap.	12	July	$40 yr.	Op.
Wilkes-Barre General Hospital [1]	Wilkes-Barre	171	127	57	34	83	472	No	10	Ap.	12	July	No	Req.
Columbia Hospital [1]	Wilkinsburg	50	40	30	21	67	208	No	5	Ap.	12	July	No	Req.
Williamsport Hospital [1]	Williamsport	99	69	44	19	44	275	No	5	Ap.	12	July	$50	Req.
Windber Hospital	Windber	57	35	10	yes	..	102	No	1	Ap.	12	July	No	Req.
York Hospital	York	57	56	32	24	25	194	No	3	Ap.	12	July	$35	....
RHODE ISLAND														
Memorial Hospital [1]	Pawtucket	30	20	..	20	40	110	No	3	Ap.	12	June	$16.67	Req.
Homeopathic Hospital	Providence	yes	yes	32	12	34	200	No	4	Ap.	12	July	$50	Req.
Rhode Island Hospital	Providence	yes	yes	..	yes	yes	600	(90)	18	Ap.	21	(1-e)	No	None
St. Joseph's Hospital	Providence	yes	yes	40	25	yes	340	No	6	Ap.	12	July	No	None
SOUTH CAROLINA														
Roper Hospital	Charleston	89	80	30	22	79	300	No	16	Ap.	12	July	(r)	Req.
Greenville City Hospital [1]	Greenville	yes	yes	yes	yes	yes	125	No	3	Ap.	12	July	$50	Req.
Spartanburg General Hospital [1]	Spartanburg	yes	yes	yes	yes	yes	129	No	3	Ap.	12	July	$25 (j)	Req.
TENNESSEE														
Knoxville General Hospital	Knoxville	yes	yes	20	10	..	275	No	7	Ap.	12	July	$25 (h)	Req.
Baptist Memorial Hospital	Memphis	yes	yes	yes	yes	yes	400	No	12	Ap.	18	(1-j)	$25 (k)	Op.
Memphis General Hospital	Memphis	yes	yes	yes	yes	yes	400	No	18	Ap.	18	(1-u)	$25	Req.
Methodist Hospital	Memphis	yes	yes	yes	yes	yes	190	No	3	Ap.	12	July	$50	None
St. Joseph's Hospital	Memphis	yes	yes	yes	yes	yes	292	No	7	Ap.	12	July	$40 (h)	Op.
George W. Hubbard Hospital [1] (col.)	Nashville	43	48	10	24	15	140	No	5	Ap.	12	June & Sept.	$15	None
Nashville General Hospital	Nashville	31	26	12	39	62	170	No	8	Ap.	12	July	$25	Req.
St. Thomas Hospital	Nashville	yes	yes	yes	yes	yes	224	No	6	Ap.	12	July	$40	None
Vanderbilt University Hospital [1]	Nashville	70	60	6	25	49	210	(91)	10	Ap.	12	July	$25	None

Numerical and other references will be found on page 637.

Name of Hospital	Location	Number of Beds						Internships					
		Surgical	Medical	Obstetric	Pediatric	Other	Total	Affiliated—For What Service	Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	Dispensary Service
TEXAS														
Hotel Dieu Hospital	Beaumont	90	50	20	15	14	189	No	2	Ap.	12	July	$50	None
Baylor Hospital [1]	Dallas	150	42	40	31	71	334	No	12	Ap.	12	July	$25	Req.
Parkland Hospital	Dallas	108	108	31	12	26	285	No	12	Ap.	12	July	$25 (k)	Req.
St. Paul's Hospital	Dallas	130	60	60	20	80	350	No	8	Ap.	12	July	$25	Req.
William Beaumont General Hospital	El Paso	166	334	yes	..	..	500	No	5	Ap.	12	July	(b)	Req.
City and County Hospital [1]	Fort Worth	40	37	14	20	23	134	No	3	Ap.	12	July	$50	Req.
Harris Clinic Hospital	Fort Worth	yes	yes	yes	yes	yes	100	No	2	Ap.	12	July	$50	Req.
St. Joseph's Infirmary	Fort Worth	93	52	20	..	51	216	No	2	Ap.	12	June & July	$30	None
John Sealy Hospital [1]	Galveston	90	64	20	30	170	374	No	8	Ap.	12	June & July	No	Req.
St. Mary's Infirmary	Galveston	60	60	17	5	23	165	No	2	Ap.	12	June	$15	None
Hermann Hospital	Houston	80	50	10	10	54	204	No	5	Ap.	12	July	$50	Req.
Jefferson Davis Hospital	Houston	yes	yes	yes	yes	yes	166	No	10	Ap.	12	July	$50	Req.
St. Joseph's Infirmary [1]	Houston	110	68	15	15	..	208	No	4	Ap.	12	July	$75	Req.
Robert B. Green Hospital	San Antonio	yes	yes	27	42	30	225	No	9	Ap.	12	July	$25	Req.
Santa Rosa Hospital	San Antonio	212	100	30	yes	44	386	No	8	Ap.	12	July	$40	Req.
Station Hospital, Fort Sam Houston	San Antonio	300	365	15	..	70	750	No	11	Ap.	12	July	(b)	None
Gulf, Colorado and Santa Fe Hospital	Temple	yes	yes	..	..	..	150	(92)	2	Ap.	12	July	$30	None
King's Daughters' Clinic and Hospital	Temple	yes	yes	8	8	yes	124	No	3	Ap.	12	June	$30	Req.
Scott and White Hospital	Temple	yes	yes	9	yes	yes	200	(92)	3	Ap.	12	July	$30	None
Providence Sanitarium	Waco	yes	yes	yes	yes	yes	165	No	2	Ap.	12	July	$25	Req.
UTAH														
Thomas D. Dee Memorial Hospital	Ogden	71	39	30	15	30	185	No	3	Ap.	12	July	$50	Op.
Dr. W. H. Groves' Latter Day Saints Hosp.	Salt Lake City	yes	yes	yes	yes	yes	466	No	8	Ap.	12	July	$25	None
Holy Cross Hospital	Salt Lake City	95	58	43	20	52	268	No	3	Ap.	12	July	$55 (r)	None
St. Mark's Hospital	Salt Lake City	30	60	13	6	54	163	No	3	Ap.	12	July	$35	None
Salt Lake General Hospital	Salt Lake City	38	52	10	13	102	215	No	4	Ap.	12	July	$30 (ee)	Req.
VERMONT														
Mary Fletcher Hospital [1]	Burlington	yes	yes	15	12	..	145	No	5	Ap.	12	July & Sept.	$50	Req.
VIRGINIA														
Hospital of St. Vincent de Paul	Norfolk	yes	yes	yes	yes	yes	250	No	5	Ap.	12	July	$25	Op.
Norfolk Protestant Hospital	Norfolk	yes	yes	25	15	yes	200	No	3	Ap.	12	July	$50	Op.
U. S. Marine Hospital	Norfolk	92	97	..	..	62	251	(93)	8	Ap.	12	July	(b)	None
Norfolk Naval Hospital	Portsmouth	355	378	..	..	..	733	(94)	10	Ap.	12	July	(b)	Req.
Medical College of Virginia, Hospital Division [1] (Memorial, Dooley, St. Philip and Crippled Children's Hospitals)	Richmond	yes	yes	yes	yes	yes	448	No	18	Ap.	12	July	$10	Req.
Stuart Circle Hospital	Richmond	40	20	18	3	28	109	No	3	Ap.	12	July	$50	None
Jefferson Hospital	Roanoke	yes	yes	yes	yes	yes	125	No	3	Ap.	12	July	$50	None
University of Virginia Hospital [1]	Univers.ty	yes	yes	yes	yes	yes	340	(95)	12	Ap.	12	July	No	Req.
WASHINGTON														
U. S. Naval Hospital	Bremerton	56	54	..	..	186	296	(96)	2	Ex.	12	July	(b)	Req.
Columbus Hospital	Seattle	101	62	37	yes	30	230	No	3	Ap.	12	July	$50	None
Harborview Hospital [1]	Seattle	yes	yes	yes	yes	yes	490	No	8	Ap.	12	Feb. & July	$50	Req.
Providence Hospital	Seattle	101	73	72	31	135	412	No	6	Ap.	12	July	$50	None
Seattle General Hospital	Seattle	yes	yes	22	..	20	130	(97)	4	Ap.	12	July & Sept.	$50	Req.
Swedish Hospital	Seattle	yes	yes	48	65	yes	260	(98)	6	Ap.	12	July & Sept.	$70	None
Virginia Mason Hospital	Seattle	57	57	30	6	30	180	No	4	Ap.	12	July	$50	Req.
Deaconess Hospital	Spokane	yes	yes	38	18	30	230	No	2	Ap.	12	July	$50	Req.
St. Luke's Hospital [1]	Spokane	yes	yes	yes	yes	yes	198	No	3	Ap.	12	July	$50	None
Northern Pacific Beneficial Association Hosp.	Tacoma	yes	yes	..	..	yes	106	(99)	2	Ap.	12	July	$25	Req.
Pierce County Hospital	Tacoma	51	128	24	15	18	236	No	2	Ap.	12	July	$75	Op.
St. Joseph's Hospital	Tacoma	128	91	50	15	16	300	No	4	Ap.	12	July	$50	Req.
Tacoma General Hospital	Tacoma	108	32	40	14	42	236	No	4	Ap.	12	July	$50	None
WEST VIRGINIA														
Charleston General Hospital	Charleston	yes	yes	yes	yes	yes	162	(100)	4	Ap.	12	July	$70	Req.
Ohio Valley General Hospital	Wheeling	yes	yes	60	35	9	275	No	6	Ap.	12	July	$40	Req.
Wheeling Hospital	Wheeling	185	50	25	40	25	325	No	4	Ap.	12	July	$50	Req.
WISCONSIN														
St. Elizabeth Hospital	Appleton	100	45	40	15	100	300	No	2	Ap.	12	July	$70	None
St. Joseph's Hospital	Ashland	50	45	20	16	33	164	No	1	Ap.	12	July	$25	None
Luther Hospital	Eau Claire	56	57	24	yes	30	167	No	2	Ap.	12	July	$25 (k)	None
St. Agnes Hospital	Fond du Lac	82	57	34	34	38	245	No	4	Ap.	12	June & July	$25	None
Mercy Hospital	Janesville	62	42	30	16	..	150	No	1	Ap.	12	July	$50	None
La Crosse Lutheran Hospital [1]	La Crosse	60	50	12	..	27	149	No	2	Ap.	12	July	$25	Req.
St. Francis Hospital	La Crosse	yes	yes	38	24	60	315	No	4	Ap.	12	July	$25	Op.
Madison General Hospital	Madison	91	36	20	10	23	180	No	4	Ap.	12	June & July	$50	None
Methodist Hospital	Madison	yes	yes	17	yes	yes	120	No	4	Ap.	12	July	$50	Req.
St. Mary's Hospital	Madison	yes	yes	yes	..	yes	180	No	6	Ap.	12	July	$50	Req.
State of Wisconsin General Hospital [1]	Madison	yes	yes	yes	yes	yes	493	No	12	Ap.	12	July	No	Op.
St. Joseph's Hospital [1]	Marshfield	55	55	15	20	25	170	No	3	Ap.	12	July	$45	None
Columbia Hospital	Milwaukee	yes	yes	27	..	24	133	(101)	8	Ap.	24	July	$25	Req.
Evangelical Deaconess Hospital	Milwaukee	yes	yes	yes	yes	yes	180	No	5	Ap.	12	June	$25 (k)	Req.
Milwaukee General Hospital [1]	Milwaukee	70	32	55	43	25	225	No	3	Ap.	12	June	$25	Req.
Milwaukee Hospital "The Passavant"	Milwaukee	yes	yes	33	yes	yes	249	No	6	Ap.	12	July	$25	Req.
Mount Sinai Hospital	Milwaukee	yes	yes	yes	yes	yes	170	No	5	Ap.	12	July	$25	Req.
St. Joseph's Hospital	Milwaukee	yes	yes	yes	yes	yes	422	No	7	Ap.	12	July	$25	None
St. Mary's Hospital	Milwaukee	136	40	32	18	40	266	No	6	Ap.	12	June	$25	None
Milwaukee County General Hospital [1]	Wauwatosa	300	360	60	80	265	1,065	No	40	Ex.	12	July	$25	Req.
CANAL ZONE														
Gorgas Hospital	Ancon	300	400	25	80	75	880	(102)	9	Ap.	12	June & July	$80	Req.
HAWAII														
Queen's Hospital	Honolulu	yes	yes	yes	yes	yes	300	(103)	7	Ap.	18	(1-c)	$50-$100	Req.
PHILIPPINE ISLANDS														
Philippine General Hospital [1]	Manila	170	142	48	54	234	648	(107)	31	Ap.(1-w)	12	March	No	Req.
FOREIGN														
Peiping Union Medical College Hospital [1]	Peiping, China	53	58	25	..	150	286	No	20	Ap.(1-x)	12	July	$7.50	Req.
Shanghai Sanitarium and Hospital [1]	Shanghai, China	yes	yes	yes	yes	yes	220	No	6	Ap.	12	July	...	Req.

Numerical and other references will be found on page 637.

NOTES

Information regarding acceptable internships in Canadian Hospitals may be obtained from the Canadian Medical Association, 184 College Street, Toronto, G. Harvey Agnew, M.D., Secretary, Department of Hospital Service.

1. Women interns admitted.
2. Women interns only.
(a) Bonus of $60.
(b) Salary established by Government Pay Tables according to rank and service, usually $166.67.
(c) Bonus of $110.
(d) Bonus of $15 for satisfactory records.
(e) $30 a month for 11 months; $150 for twelfth month.
(f) Bonus of $25.
(g) $10 a month for first 6 months; $20 a month for next six months, and $30 a month for last 6 months; bonus of $50.
(h) Bonus of $120.
(i) Bonus of $50.
(j) Bonus of $300.
(k) Bonus of $100.
(m) Bonus of $125.
(n) Bonus of $190.
(o) Bonus of $200.
(p) In lieu of maintenance.
(q) $100 for largest number autopsies; $50 for next largest number.
(r) Bonus of $180.
(s) Drawing account of $100.
(t) $15 a month for first 6 months; $20 a month for last 6 months.
(u) $50 a month for first 6 months; $75 a month for last 6 months.
(v) Bonus of $40.
(w) Semi-annual bonus of $10.
(x) $35 a month for first 12 months; $50 a month for last 6 months; bonus of $330.
(y) $2.50 for each autopsy obtained.
(z) Bonus of $75.
(aa) Bonus of $160.
(bb) Bonus for autopsies.
(cc) Bonus of $240.
(1-a) January, July, April and August.
(1-b) January, March, July and November.
(1-c) Quarterly.
(1-d) January, May and September.
(1-e) January, July and October.
(1-f) Every two months.
(1-g) July, August and September.
(1-h) March, July and November.
(1-i) June, July and August.
(1-j) Every six weeks.
(1-k) July, September and October.
(1-m) January, April and July.
(1-n) March, July and December.
(1-p) February, May, August and November.
(1-q) July, August, September and October.
(1-r) January, February, July and August.
(1-s) February, June and October.
(1-t) January, June and September.
(1-u) Every month.
(1-v) March, June and December.
(1-w) All internships reserved for the fifth year students of the College of Medicine, University of the Philippines.
(1-x) Most internships are filled by graduates of the Peiping Union Medical College.

Affiliation as Referred to in Column Headed: "Affiliated—For What Service."

3. Patton State Hospital, Patton, psychiatry and neurology.
4. Children's Hospital, Los Angeles, and maternity service of Los Angeles City Health Department.
5. Mount Zion Hospital and St. Francis Hospital, San Francisco, obstetrics.
6. Internship in these hospitals includes service in: Highland Hospital, Oakland; Fairmont Hospital, San Leandro; Arroyo Sanatorium, Livermore, and Del Valle Preventorium, Livermore.
7. Woman's Hospital, Pasadena, obstetrics.
8. Mercy Hospital, San Diego, obstetrics and gynecology.
9. University of California Hospital, San Francisco, obstetrics and pediatrics.
10. Napa State Hospital, Imola; University of California and Stanford University Hospitals, and Laguna Honda Home, San Francisco.
11. St. Francis Hospital and University of California Hospital, San Francisco, obstetrics and pediatrics.
12. San Francisco Hospital, obstetrics, gynecology and pediatrics.
13. Santa Barbara General Hospital, tuberculosis, neuropsychiatry, and contagious diseases.
14. St. Francis Hospital and Santa Barbara Cottage Hospital.
15. St. Joseph's Hospital and Children's Hospital, Denver, obstetrics, acute surgery and pediatrics.
16. Children's Hospital, Denver, pediatrics.
17. City Dispensary, Bridgeport.
18. Hartford Isolation Hospital.
19. Columbia Hospital for Women and Children's Hospital, Washington, obstetrics and pediatrics.
20. Columbia Hospital for Women, Washington, obstetrics and gynecology.
21. Children's Hospital, Washington, pediatrics.
22. Misericordia Hospital, Chicago, obstetrics and pediatrics.
23. Municipal Contagious Disease Hospital, Chicago, and Winfield Tuberculosis Sanatorium, Winfield.
24. Grant Hospital, Chicago, obstetrics and gynecology.
25. Internship in the University of Chicago Clinics includes service in: Albert Merritt Billings Hospital, Bobs Roberts Memorial Hospital for Children, Nancy Adele McElwee Memorial and Gertrude Dunn Hicks Memorial Hospital, Chicago Lying-In Hospital, and Max Epstein Clinic.
26. Macon County Tuberculosis Sanatorium and City Public Hospital, Decatur.
27. Chicago Lying-In Hospital and Children's Memorial Hospital, Chicago, obstetrics and pediatrics.
28. The Hospitals of Indiana University include the Robert W. Long Hospital, the James Whitcomb Riley Hospital for Children, and the William H. Coleman Hospital for Women.
29. St. Bernard's Hospital, Council Bluffs, psychiatry.
30. Iowa Lutheran Maternity Hospital, Des Moines.
31. Broadlawns-Polk County Public Hospital for Contagious Diseases.
32. Touro Infirmary, New Orleans, obstetrics and gynecology.
33. Johns Hopkins Hospital, Baltimore, genito-urinary.
34. University of Maryland Hospital, obstetrics, pediatrics and gynecology; Sydenham Hospital, contagious diseases.
35. Internship in this hospital includes services in the Main Hospital, the South Department for Infectious Diseases, Sanatorium Division, Haymarket Square Relief Station, East Boston Relief Station, and Convalescent Home.
36. Evangeline Booth Home and Maternity Hospital, Boston.
37. New York Nursery and Child's Hospital, New York, obstetrics.
38. St. Vincent's Maternity Hospital, Kansas City, Mo.
39. Mercywood Sanitarium, Ann Arbor, psychiatry.
40. Michigan Mutual Hospital, Detroit, industrial surgery.
41. Herman Kiefer Hospital and Redford Branch Receiving Hospital, Detroit, obstetrics and general.
42. Herman Kiefer Hospital, contagious diseases and tuberculosis.
43. Herman Kiefer Hospital and Children's Hospital.
44. St. Joseph's Retreat, Dearborn, psychiatry.
45. Children's Hospital, Detroit, pediatrics.
46. Herman Kiefer Hospital and Eloise Hospital for Mental Diseases.
47. Ingham Sanatorium, Lansing, tuberculosis, and Michigan State Vocational School.
48. Muskegon County Tuberculosis Sanatorium, Muskegon.
49. Gillette State Hospital for Crippled Children, St. Paul.
50. Glen Lake Sanatorium, Oak Terrace, tuberculosis.
51. Ancker Hospital and Shriners' Hospital for Crippled Children, contagious diseases and orthopedics.
52. Children's Hospital and Gillette State Hospital for Crippled Children, St. Paul.
53. St. Vincent's Hospital, Kansas City, obstetrics.
54. No obstetric service.
55. St. Louis Children's Hospital and Shriners' Hospital for Crippled Children.
56. Jewish Sanatorium, Robertson, tuberculosis.
57. Municipal Hospital, Atlantic City, contagious diseases and genito-urinary; Atlantic County Hospital for Tuberculous Diseases, Northfield.
58. Newark Maternity Hospital.
59. Kingston Avenue Hospital, Brooklyn, contagious diseases.
60. Providence City Hospital, contagious diseases and pediatrics.
61. House of St. Giles the Cripple, Brooklyn, orthopedics.
62. Methodist Episcopal Hospital, Brooklyn, obstetrics.
63. Providence Retreat and St. Mary's Hospital, Buffalo, psychiatry and obstetrics.
64. Jewish Maternity Hospital, New York.
65. John E. Berwind Clinic, New York, obstetrics.
66. Internship in this hospital includes service in the Rochester Municipal Hospital.
67. Schenectady City Hospital, contagious diseases.
68. St. Vincent's Hospital, Staten Island, obstetrics.
69. City Hospital, Syracuse, contagious diseases.
70. Anthony N. Brady Maternity Hospital, Albany.
71. Children's Hospital, Akron, pediatrics and orthopedics, and Springfield Lake Sanatorium, East Akron, tuberculosis.
72. Children's Hospital, Cincinnati, pediatrics.
73. Christian R. Holmes Hospital and Hamilton County Tuberculosis Sanatorium, Cincinnati.
74. St. Elizabeth's Hospital, Covington, Ky., obstetrics.
75. St. Ann's Maternity Hospital, Cleveland.
76. City Hospital, Cleveland, communicable diseases.
77. Starling-Loving University Hospital and Children's Hospital, Columbus, obstetrics, pediatrics, and orthopedics.
78. Mahoning Tuberculosis Sanatorium, Youngstown.
79. Shriners' Hospital for Crippled Children, Portland.
80. Shriners' Hospital for Crippled Children and Doernbecher Memorial Hospital, Portland, orthopedics and pediatrics.
81. Allentown State Hospital, Allentown, psychiatry.
82. Kensington Hospital for Women, Philadelphia, obstetrics.
83. Philadelphia Hospital for Contagious Diseases.
84. St. Vincent's Hospital for Women and Children, Philadelphia, obstetrics.
85. Garretson Hospital, Philadelphia, obstetrics.
86. Misericordia Hospital, Philadelphia, obstetrics.
87. Municipal Hospital for Contagious Diseases, Pittsburgh.
88. Elizabeth Steel Magee Hospital, Children's Hospital, and Eye and Ear Hospital, Pittsburgh.
89. Manhattan Maternity and Dispensary, New York.
90. Providence Lying-In Hospital, Providence.
91. Willard Parker Hospital, New York, contagious diseases and pediatrics.
92. Gulf, Colorado and Santa Fe Hospital and the Scott and White Hospital affiliated furnish one internship.
93. Norfolk Protestant Hospital, Florence Crittenden Home and King's Daughters' Clinic, obstetrics and pediatrics.
94. King's Daughters' Hospital, Portsmouth, obstetrics.
95. Blue Ridge Sanatorium, Charlottesville, tuberculosis.
96. Swedish Hospital, Seattle, obstetrics.
97. Children's Orthopedic Hospital, Seattle.
98. Children's Orthopedic Hospital and Harborview Hospital, Seattle, orthopedics, pediatrics, and emergency surgery; also Firland Sanatorium, Richmond Highlands, tuberculosis and contagious diseases.
99. Pierce County Hospital, Tacoma, obstetrics.
100. Hill Crest Sanatorium, Charleston, tuberculosis.
101. Milwaukee Children's Hospital, pediatrics, and South View Isolation Hospital, contagious diseases.
102. Corozal Hospital, Corozal, C.Z., psychiatry, and Colon Hospital, Colon, R.P., general.
103. Kauikeolani Children's Hospital, Honolulu, pediatrics.
104. Kansas City General Hospital, Kansas City, Mo.
105. St. Mary's Group of Hospitals includes St. Mary's Hospital, St. Mary's Infirmary, and Mt. St. Rose Sanatorium.
106. St. Elizabeth Hospital, Elizabeth, obstetrics.
107. San Lazaro Hospital, Manila, infectious diseases.

DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine and which, after careful investigation, have been deemed worthy of being recognized as such by the Council on Medical Education and Hospitals of the American Medical Association. Of these eleven do not grant degrees. The name, address, year of organization, history and date when the first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination. Figures for graduates include all who graduated since July 1, 1930. Fifteen states, Alaska (Ter.), Delaware, District of Columbia, Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Rhode Island, South Dakota, Utah, Washington, West Virginia, Wisconsin and Wyoming, require also a year's hospital internship as an essential qualification for a license.

ALABAMA

Tuscaloosa

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE, University (P. O.).—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus at Tuscaloosa. Coeducational since 1920. Entrance requirements are seventy semester hours of collegiate work. The course of study covers two years of thirty-six weeks each. The faculty includes 6 professors and 16 instructors, assistants, etc., a total of 22. The tuition fees are $221.50 the first year and $241.50 the second year. The Dean is Stuart Graves, M.D. Total registration for 1930-1931 was 104. The sixty-sixth session begins Sept. 10, 1931, and ends May 24, 1932.

ARKANSAS

Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE, 300 W. Markham Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918, but resumed in 1923. Coeducational since organization. The faculty consists of 30 professors and 55 lecturers and assistants, total 85. The curriculum embraces four years of nine months each. Entrance requirements are two years of collegiate work in addition to a four-year high school course. The fees for the four years, respectively, for residents of Arkansas are $165, $160, $155 and $155; nonresidents are charged $100 additional each year. The Dean is Frank Vinsonhaler, M.D. The total registration for 1930-1931 was 184; graduates, 32. The fifty-third session begins Sept. 16, 1931, and ends May 31, 1932.

CALIFORNIA

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Third and Parnassus Avenues, San Francisco.—Organized in 1862 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California, at Los Angeles, became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica, and therapeutics were provided. Coeducational since organization. Three years of collegiate work are required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The faculty is composed of 120 professors and 226 associates and assistants, a total of 346. The course covers four years of eight and one-half months each, and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California are $290, $225, $225 and $225; nonresidents are charged $300 additional each year. The Dean is Langley Porter, M.D., San Francisco. Total registration for 1930-1931 was 229; graduates, 56. The fifty-ninth session begins Aug. 17, 1931, and ends May 14, 1932.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles. Coeducational since organization. The faculty is composed of 58 professors and 172 associates, assistants and instructors, a total of 230. The course covers a period of five years including one year of internship. During the first and second years, the students are in school twelve months each year. This is accomplished by means of the "Cooperative Plan," the student spending alternate months in an approved hospital in practical lines of medical training. Sixty-four semester hours of college work are required for admission. The total fees for the four years, respectively, are $258.50, $248.50, $334.50 and $316.50. The Dean of the Loma Linda Division is Edward H. Risley, M.D., and the Dean of the Los Angeles Division is Llewellyn C. Kellogg, M.D. The total registration for 1930-1931 was 373; graduates, 78. The twenty-third session begins July 2, 1931, and ends June 19, 1932.

Los Angeles

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE.—Organized in 1903 as the College of Physicians and Surgeons. The first class graduated in 1905. In 1909 it became the Medical Department of the University of Southern California. The Medical Department was suspended in 1920; reorganized in May, 1928, under the present title. The faculty consists of 24 professors and 24 instructors, assistants, etc., a total of 48. At present courses for the first two years only are offered. The third year of the course is to be given for the first time during the session of 1931-1932. Eventually a five-year medical course, including a year's internship in a hospital or other practical training, will be offered. Three years of collegiate work are required for admission. Coeducational since organization. Annual fees amount to $426. The Dean is Paul S. McKibben, Ph.D. The total registration for 1930-1931 was 93. The next session begins Sept. 14, 1931, and ends June 4, 1932.

San Francisco (Stanford University)

STANFORD UNIVERSITY SCHOOL OF MEDICINE, Campus, 2398 Sacramento Street, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The first class was graduated in 1913. Coeducational since organization. The faculty consists of 94 professors and 118 lecturers, assistants, etc., a total of 212. Three years of collegiate work are required for admission. The course covers four years of eight and one-half months each, plus a fifth year of practice or intern work. The fees for the four years, respectively, are $387, $369, $360 and $360. The Dean is William Ophüls, M.D., San Francisco. The total registration for 1930-1931 was 191; graduates, 49. The twenty-second session begins Oct. 1, 1931, and ends June 20, 1932.

COLORADO

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911. Coeducational since organization. The faculty is composed of 55 professors and 120 lecturers, instructors and assistants, a total of 175. The course covers four years of nine months each. The college also is urging a year's internship in a hospital. The entrance requirements are three years of college work. The fees for residents of Colorado, for each of the four years are, respectively, $211, $231, $181 and $191. Nonresidents pay $132 more each year. The Dean is Maurice H. Rees, M.D. The total registration for 1930-1931 was 220; graduates, 48. The fiftieth session begins Sept. 28, 1931, and ends June 13, 1932.

CONNECTICUT

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Coeducational since 1916. The faculty consists of 96 professors and 150 lecturers and assistants, a total of 246. The requirements for admission are three years of collegiate work plus completion of courses in physics, inorganic chemistry, qualitative analysis, general biology, organic chemistry and physical chemistry or laboratory physics, all equivalent to the courses in these subjects in Yale University. The student also must have two years of French or German. The course covers four years of nine months each. The fees for the four years, respectively, are $505, $500, $500 and $520. The Dean is Milton C. Winternitz, M.D. The total registration for 1930-1931 was 199; graduates, 48. The one hundred and nineteenth session begins Oct. 1, 1931, and ends June 15, 1932.

DISTRICT OF COLUMBIA

Washington

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 3900 Reservoir Road, N.W.—Organized 1851. First class graduated in 1852. The faculty is composed of 103 professors, 106 instructors and assistants; total 209. Three years of collegiate work are required for entrance. The course of study covers four terms of eight and one-half months each. The present fees for each of the four sessions, respectively, are $460, $410, $360 and

$365. The Acting Dean is Rev. John L. Gipprich, S.J. The registration for 1930-1931 was 551; graduates, 102. The eighty-first session begins Sept. 17, 1931, and ends June 4, 1932.

GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, 1335 H Street, N.W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except 1834 to 1838, and 1861 to 1863 inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. Coeducational since 1884. The faculty is composed of 67 professors and 135 instructors, demonstrators and assistants, a total of 202. Two years of collegiate work are required for admission. The course covers four years of thirty-two weeks each. The fees for the four years, respectively, are $491, $491, $491 and $476. The Dean is Earl Baldwin McKinley, M.D. The total registration for 1930-1931 was 294; graduates, 74. The one hundred and seventh session begins Sept. 23, 1931, and ends June 15, 1932.

HOWARD UNIVERSITY COLLEGE OF MEDICINE, Fifth and W Streets, N. W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since 1869. Colored students compose a majority of those in attendance. The faculty comprises 30 professors and 65 lecturers and assistants, 95 in all. The admission requirements are at least two years of collegiate work, including physics, chemistry, botany and zoology, English and French or German. The course covers four years of thirty-three weeks each. The fees for each of the four sessions, respectively, are $274.50, $274.50, $264.50 and $264.50. The Dean is Numa P. G. Adams, M.D. Registration for 1930-1931 was 226; graduates, 54. The sixty-fourth session begins Oct. 1, 1931, and ends June 9, 1932.

GEORGIA

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 50 Armstrong Street and Druid Hills.—Organized in 1854 as the Atlanta School of Medicine. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Two years of college work are required for admission. The faculty has 18 professors and 140 associates and assistants, a total of 158. The course of study is four years of thirty-two weeks each. The fees for each of the four years, respectively, are $270, $255, $255 and $280. The Dean is Russell H. Oppenheimer, M.D. Total registration for 1930-1931 was 209; graduates, 48. The next session begins Sept. 29, 1931, and ends June 7, 1932.

Augusta

UNIVERSITY OF GEORGIA MEDICAL DEPARTMENT, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Property transferred to university in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. The faculty includes 35 professors and 30 assistants, 65 in all. Two years of college work are required for entrance. The course is four years of thirty-four weeks each. The fees for each of the four years, respectively, are $105, $100, $100 and $100 for residents of Georgia, and $300 each year for nonresidents. The Dean is William L. Moss, M.D. The total registration for 1930-1931 was 145; graduates, 25. The one hundred and third session begins Sept. 26, 1931, and ends June 6, 1932.

ILLINOIS

Chicago

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 S. Lincoln Street.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Eclecticism dropped and title of Bennett Medical College assumed in 1909. First class graduated in 1870, and a class graduated each subsequent year. Absorbed the Illinois Medical College in 1910 and the Reliance Medical College in 1911. In 1910 it became by affiliation the School of Medicine of Loyola University; the university assumed full control in 1915. Took over by purchase the Chicago College of Medicine and Surgery in 1917. Coeducational. Two years of college work are required for admission. The course of study is five years including an internship in a hospital. The faculty is composed of 50 professors and 212 assistants, lecturers, instructors, etc., a total of 262. The fees for each year are $363.50, $377.50, $332 and $298, respectively. The Dean is Louis D. Moorhead, M.D. The total enrollment for 1930-1931 was 507; graduates, 96. The next session begins Oct. 1, 1931, and ends June 11, 1932.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The faculty comprises 115 professors and 284 lecturers and assistants, a total of 399. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University, plus three years of college work, including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each and a fifth year spent in an approved hospital as an intern or in other practical work. The total fees are $355 each year. The Dean is Irving S. Cutter, M.D. The total registration for 1930-1931 was 514; graduates, M.B., 115, M.D., 131. The seventy-third session begins Sept. 29, 1931, and ends June 13, 1932.

UNIVERSITY OF CHICAGO, GRADUATE SCHOOL OF MEDICINE OF THE DIVISION OF THE BIOLOGICAL SCIENCES.—Organized in 1924 as a part of the Ogden Graduate School of Science. The work of the first two years of the medical course has been given on the Quadrangles since 1899, and that of the clinical years was added in 1924 with the organization of this medical school. All the work leading to the degree of M.D. may now be done on the Quadrangles. A fifth year, spent in successful internship in an approved hospital or in advanced work in some branch of medical science, is required for graduation. Coeducational. The faculty is composed of 84 professors, 112 associates, instructors, etc., a total of 196. The requirements for admission are four years of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. Applications for admission in the autumn should be made in April, for admission in the spring, in January. The school operates under the "quarter system" in which the year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The tuition fees for each of the four years are $375. The Dean of medical students is B. C. H. Harvey, M.D. Total registration for 1930-1931 was 325; graduates, 4. The next session begins Oct. 1, 1931, and ends June 15, 1932. Students are admitted at the beginning of either autumn or spring quarters.

UNIVERSITY OF CHICAGO) RUSH MEDICAL COLLEGE.—Chartered in 1837; held first class in 1843. First class graduated in 1844. In 1887 the College became the medical department of Lake Forest University, retaining, however, its self-government. This relation was dissolved in April, 1898, and in the same month affiliation with the University of Chicago was established. Since that time the work of the first two years has been given on the University Quadrangles. In May, 1924, by a new contract, the University of Chicago took over the work of Rush Medical College as a department of the University. Since 1914 the course has included a fifth year consisting of a hospital internship or of a fellowship in one of the departments. Coeducational since 1898. Classes are limited to 140 students. No application for admission is accepted after June 1. The school operates under the "quarter system" in which the year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The faculty is composed of 120 professors, 157 associates, instructors, etc., a total of 277. A bachelor degree is required for admission. The fee for the third year is $380, and for the fourth $400. Total registration for 1930-1931 was 333; graduates, 142. The Dean is Ernest E. Irons, M.D. The eighty-seventh session begins Oct. 1, 1931, and ends Sept. 2, 1932. The school is in session all year except the month of September.

THE UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 508 South Honore Street.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the University was canceled in June, 1912. Was restored in March, 1913, when the present title was assumed. Coeducational since 1898. Two years of collegiate work are required for admission. The curriculum covers four years of 32 weeks each, and a year of internship in an approved hospital. The faculty is composed of 92 professors and 209 assistants and instructors, a total of 301. Tuition $200 per year for students, residents of Illinois, nonresident students, $300 per year. The Dean is David John Davis, M.D. The total registration for 1930-1931 was 584; graduates, 128. The fiftieth session begins Oct. 5, 1931, and ends June 11, 1932.

INDIANA

Bloomington-Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The faculty consists of 233 professors, lecturer, associates and assistants. Two years of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is given at Indianapolis. The fees for each of the four years, respectively, are $187, $175, $175 and $175 for residents of Indiana and $75 additional for first year, and $175 additional for last three years for nonresidents. A fifth optional intern year leading to the "M.D. cum laude" has been added. The Dean is Charles P. Emerson, M.D., Indianapolis, and the Dean at Bloomington is B. D. Myers, M.D. The total registration for 1930-1931 was 443; graduates, 102. The next session begins Sept. 14, 1931, and ends June 10, 1932.

IOWA

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. The faculty is made up of 46 professors, 63 lecturers, demonstrators and assistants, a total of 109. Two years of college work, including courses in physics, chemistry, biology, French or German and English, are required for admission. The course of study covers four years of thirty-four weeks each. The tuition fee is $192 each year for residents of Iowa and $456 for nonresidents, plus a matriculation fee of $10 and a graduation fee of $15. The Dean is Henry S. Houghton, M.D. Total registration for 1930-1931 was 401; graduates, 90. The sixty-second session begins Sept. 21, 1931, and ends June 6, 1932.

KANSAS

Lawrence-Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. Absorbed Kansas Medical College in 1913. First class graduated in 1906. The clinical courses are given at Kansas City. Coeducational since 1880. The faculty includes 23 professors and 130 instructors, assistants, etc., a total of 153. The requirement for admission is two years of collegiate work. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are, respectively, $162, $154, $155 and $160. For nonresidents the fees are $50 additional each year. The Dean is Harry R. Wahl, M.D., Kansas City. The total registration for 1930-1931 was 253; graduates, 58. The fifty-second session begins Sept. 17, 1931, and ends June 6, 1932.

KENTUCKY

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, First and Chestnut Streets.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908 the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of college work are required for admission. The faculty numbers 27 professors and 116 assistants, instructors, etc., a total of 143. Students limited to 90 freshmen, 90 juniors; number of sophomores and seniors contingent upon number promoted. Course covers four years of thirty-two weeks each, exclusive of vacations and examinations. Fees for four years are, respectively, $365, $365, $370 and $380. The Dean is John Walker Moore, M.D. Total registration for 1930-1931 was 338; graduates, 87. Next session begins Sept. 17, 1931, and ends June 4, 1932.

LOUISIANA

New Orleans

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. The faculty has 28 professors and 126 associate and assistant professors, instructors and assistants, a total of 154. The course covers four years of thirty-two weeks each. Two years of collegiate work are required for admission. Total fees for each of the four years, respectively, are $350, $340, $325 and $355. The Dean is Charles C. Bass, M.D. The total registration for 1930-1931 was 468; graduates, 100. The ninety-eighth session begins Sept. 23, 1931, and ends June 7, 1932.

MARYLAND

Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, Washington and Monument Streets.—Organized in 1887. Offered preliminary course only until 1893. Coeducational since organization. The first class graduated in 1897. The faculty consists of 71 professors and 295 instructors, assistants, etc., a total of 366. The requirements for admission demand that the applicant possess a collegiate degree and have a knowledge of French and German (two years each of college instruction), physics and biology, such as may be obtained from a year's course, and a two years' course in chemistry. The course extends over four years of eight and one-half months each. The total fees for each year are, respectively, $611, $610, $610 and $610. The Dean is Alan M. Chesney, M.D. Total registration for 1930-1931 was 278; graduates, 69. The thirty-ninth session begins Sept. 29, 1931, and ends June 14, 1932.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. The faculty consists of 90 professors and 155 instructors and assistants, a total of 245. Two years of college work are required for admission. The course covers four years of eight months each. The fees for the four years, respectively, are $385, $375, $375 and $390 for residents of the state; for nonresidents the fees are $150 additional each year. The Dean is J. M. H. Rowland, M.D. Total registration for 1930-1931 was 409; graduates, 91. The one hundred and twenty-fourth session begins Sept. 28, 1931, and ends June 4, 1932.

MASSACHUSETTS

Boston

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Three years of collegiate work are required for admission. The faculty includes 20 professors, 151 associates, etc., making a total of 171. The course covers four years of thirty-two weeks each. Total fees for each of the four years, respectively, are $416.50, $391.50, $391.50 and $401.50 for women and $5 more each year for men. The Dean is Alexander S. Begg, M.D. Total registration for 1930-1931 was 223; graduates, 47. The fifty-ninth session begins Sept. 17, 1931, and ends June 13, 1932.

HARVARD UNIVERSITY MEDICAL SCHOOL, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 110 professors and 341 instructors and assistants, a total of 451. Candidates for admission must present a college degree or two years of work leading to such a degree with standing in the upper third of the class. The college work must include a year of physics, biology, general chemistry, a half year of organic chemistry, and a reading knowledge of French or German. The total fee for each of the four years is $400 plus $5 the first year for matriculation. The Dean is David L. Edsall, M.D. The total registration for 1930-1931 was 517; graduates, 131. The one hundred and forty-ninth session begins Sept. 28, 1931, and ends June 23, 1932.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. It has a faculty of 60 professors and 193 assistants, lecturers, etc., a total of 253. A minimum of two years of collegiate work is required for admission, but applicants with degrees are given preference. The course covers four years of eight months each. The total fees for each of the four years are $407, $402, $352 and $362. The Dean is A. Warren Stearns, M.D. Total registration for 1930-1931 was 482; graduates, 124. The thirty-sixth session begins Sept. 23, 1931, and ends May 29, 1932.

MICHIGAN

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Coeducational since organization. It has a faculty of 24 professors, 15 associate professors, 22 assistant professors, 73 instructors and lecturers; a total of 134. The entrance requirements are ninety semester hours, including courses in chemistry, physics and biology, with laboratory work, and two years of French or German, one year of which must be of college grade. The curriculum embraces four years of nine months each. The total fees for Michigan students are $200, $205, $205 and $202.50 for each of the four years, respectively, plus a matriculation fee of $10; for nonresidents, $100 per year additional. The matriculation fee for nonresidents is $25. The secretary is Arthur C. Curtis, M.D. The total registration for 1930-1931 was 574; graduates, 162. The eighty-second session begins Sept. 28, 1931, and ends June 20, 1932.

Detroit

DETROIT COLLEGE OF MEDICINE AND SURGERY, 1516 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. Coeducational since 1917. Entrance requirement is an academic degree or 90 semester hours of academic credit with "Combined Degree" guaranteed by school of arts and sciences. The faculty embraces 33 professors, 101 lecturers, etc., a total of 134. The course covers four years of nine months each and a fifth hospital intern year. The total fees each year for residents of Detroit are $250; for nonresidents, $350. The Dean is W. H. MacCraken, M.D. The total registration for 1930-1931 was 308; graduates, 51. The forty-seventh session begins Sept. 24, 1931, and ends June 18, 1932.

MINNESOTA

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The faculty includes 176 professors and 155 instructors and assistants, a total of 331. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are two years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; thirteen credits of general chemistry, qualitative and quantitative analysis and organic chemistry; eight credits of zoology, and a reading knowledge of scientific German. Students are required to secure a degree of B.S. or A.B. before receiving the degree of Bachelor of Medicine (M.B.) which is granted at the end of the four-year course. The M.D. is conferred after a year of intern work, of advanced laboratory work, or of public health work has been completed. Classes are graduated three times a year, in March, June and December (after 1932, no December class). Total fees are $225 for residents and $300 for nonresidents, each year of three quarters; incidental fee of $6 per quarter also. The Dean is Elias P. Lyon, M.D. The total registration for 1930-1931 was 505; graduates, 123. The forty-third session begins Sept. 28, 1931, and ends Aug. 27, 1932.

MISSISSIPPI

University (Oxford)

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903. Coeducational since organization. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg, but was discontinued in 1910 after graduating one class. The session extends over eight and one-half months. Entrance requirement is two years of collegiate work. The total fees each year for residents are $200.75; for nonresidents $50 per year additional. The faculty numbers 8 professors and 10 instructors, assistants, etc., a total of 18. The Dean is P. L. Mull, M.D. The total registration for 1930-1931 was 61. The twenty-ninth session begins Sept. 17, 1931, and ends May 30, 1932.

MISSOURI

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Beginning in September, 1931, a small junior class will be enrolled and in 1932 a senior curriculum will be provided. In 1933 the degree of Doctor of Medicine will again be conferred. Coeducational since 1872. The faculty includes 17 professors and 15 assistant professors, lecturers, etc., a total of 32. The entrance requirements are three years of college work, including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours; organic chemistry, 5 hours, and general bacteriology, 3 hours. Total fees for the first year are $139; for the second, $121. Nonresidents of the state pay $15 per term extra. The Dean is Edgar Allen, Ph.D. Total registration for 1930-1931 was 72. The next session begins Sept. 15, 1931, and ends June 8, 1932.

St. Louis

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Boulevard.—Oragnized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The faculty is composed of 77 professors and 213 instructors and assistants, a total of 290. The requirement for admission is a qualitative standard of two years of collegiate study in the customary subjects, but applicants presenting meritorius credit in excess of the two year minimum are accepted by preference. The curriculum covers four years of thirty-two weeks each. The summer is optional and offers courses academically equivalent to those in the regular session. The total fees for the four years, respectively, are $385, $380, $380 and $400. The Dean is Rev. Alphonse M. Schwitalla, Ph.D. The total registration for 1930-1931 was 532; graduates, 113. The next session begins Sept. 22, 1931, and ends June 1, 1932.

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1918. The faculty comprises 48 professors and 234 lecturers, instructors, etc., a total of 282. Four years of college work are required for admission, including courses in English, physics, chemistry and biology, and a reading knowledge of German or French. The course is four years of eight months each. The total fees for the four years are, respectively, $422, $417, $417 and $422. The Dean is W. McKim Marriott, M.D. The total registration for 1930-1931 was 323; graduates, 78. The next session begins Sept. 24, 1931, and ends June 7, 1932.

NEBRASKA

Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE, 306 North 14th Street.—Organized in 1892 as the John A. Creighton Medical College. Present title in 1921. The first class graduated in 1893. Coeducational since organization. It has a faculty of 58 professors and 50 instructors, lecturers and assistants, a total of 108. Two years of collegiate work are required for admission. The course of study embraces four years of eight months each. The total fees each year for the four years are, respectively, $405, $385, $325 and $335. The Dean is Hermann von W. Schulte, M.D. Total registration for 1930-1931 was 281; graduates, 53. The fiftieth session begins Sept. 24, 1931, and ends June 3, 1932.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two at Omaha until 1913, when all four years were transferred to Omaha. Coeducational since 1882. The faculty is composed of 63 professors and 69 lecturers and instructors, a total of 132. Sixty-five semester hours of collegiate work are required for admission, including courses in physics, chemistry and zoology. The fees for each of the four years, respectively, are $217, $212, $212 and $212. The Dean is C. W. M. Poynter, M.D. Total registration for 1930-1931 was 326; graduates, 63. The next session begins Sept. 18, 1931, and ends June 6, 1932.

NEW HAMPSHIRE

Hanover

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical teaching was discontinued in 1914. The faculty is made up of 15 professors and 6 instructors, a total of 21. Three years of collegiate work are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The fees for the first year are $410 and $400 for the second year. The Dean is John P. Bowler, M.D. The total registration for 1930-1931 was 43. The next session opens Sept. 16, 1931, and ends June 21, 1932.

NEW YORK

Albany

ALBANY MEDICAL COLLEGE, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The faculty is composed of 27 professors and 69 instructors, assistants, etc., a total of 96. Two years of collegiate work, including college courses in physics, chemistry (including organic and analytic), biology, English, and a modern foreign language are required for admission. The curriculum covers four years of eight months each. The total fees for the four years, respectively, are $430, $305, $305 and $305. The Dean is Thomas Ordway, M.D. The total registration for 1930-1931 was 126; graduates, 29. The one hundred and first session begins Sept. 28, 1931, and ends June 20, 1932.

Brooklyn

LONG ISLAND COLLEGE OF MEDICINE, 350 Henry Street.—Organized in 1858 as The Long Island College Hospital. The first class graduated in 1860 and the last class in 1930. Reorganized with a new charter in 1930 as the present institution. The first class graduated in 1931. Coeducational. It has a faculty of 115 professors and 133 assistants, instructors, etc., a total of 248. Seventy-two semester hours of collegiate work, including college courses in physics, chemistry and biology, are required for admission. The course covers four years of eight months each. The fees for the four years, respectively, are $545, $560, $530 and $560. The Dean is Adam M. Miller, A.M. Total registration for 1930-1931 was 443; graduates, 101. The second session begins Sept. 28, 1931, and ends June 4, 1932.

Buffalo

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The faculty is composed of 70 professors and 148 associates, assistants, etc., a total of 218. Two years of collegiate work, including college courses in physics, chemistry, biology, English and French or German, are required for admission. The course covers four years of eight months each. The total fees for each of the four years are, respectively, $527, $522, $517 and $527. The Dean is Edward W. Koch, M.D. Total registration for 1930-1931 was 275; graduates, 70. The eighty-sixth session begins Sept. 28, 1931, and ends June 15, 1932.

New York

CORNELL UNIVERSITY MEDICAL COLLEGE, First Avenue and Twenty-Eighth Street, Ithaca—New York.—Organized in 1898. The work of the first year may be taken either in Ithaca or in New York. Coeducational since organization. The faculty is composed of 82 professors and 161 assistants, lecturers, instructors, etc., a total of 243. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have a knowledge of physics, chemistry, biology, English and a modern language. The fees for each of the four years are, respectively, $510, $500, 500 and $535. The Director is G. Canby Robinson, M.D., New York. Total registration for 1930-1931 was 238 (including Ithaca students); graduates, 67. The thirty-fourth session begins Sept. 28, 1931, and ends June 4, 1932.

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 630 West 168th Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became, by affiliation, the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. Coeducational since 1917. The faculty is composed of 178 professors and 448 instructors, demonstrators, etc., a total of 626. Two years of collegiate work of 72 points, including courses in physics, chemistry, biology, English and either French or German, constitute the minimum requirement for admission. The work covers four years of eight months each. The Dean is Willard C. Rappleye, M.D. The total fees for the four years, respectively, are $535, $520, $520 and $540. Total registration for 1930-1931 was 420; graduates, 101. The one hundred and twenty-fourth session begins Sept. 23, 1931, and ends June 1, 1932.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, 450 East 64th Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; present title in 1908. The first class graduated in 1861. Coeducational since

1919. Two years of collegiate work are required for admission. The course covers four years of eight months each. It has a faculty of 53 professors, 19 assistant professors and 98 lecturers and assistants, a total of 170. The total fees for the four years are, respectively, $540, $530, $530 and $560. The Dean is Claude A. Burrett, M.D. Total registration for 1930-1931 was 348; graduates, 80. The seventy-second session begins Sept. 22, 1931, and ends June 7, 1932.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, 338 East Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. First class graduated in 1899. Coeducational since 1919. The faculty is composed of 99 professors, associate, assistant, clinical and assistant clinical professors, and 188 lecturers, instructors, etc., a total of 287. The course covers four years; the first three years consist of eight months each and the fourth year consists of nine months. Entrance requirements are that all candidates must be graduates of approved colleges or scientific schools, or seniors in good standing in approved colleges or scientific schools upon condition that their faculty will permit them to substitute the first year in University and Bellevue Hospital Medical College for the fourth year of their college course, and will confer upon them the bachelor degree upon the satisfactory completion of the year's work. The fees for the four years, respectively, are $540, $528, $517 and $538. The Dean is Samuel A. Brown, M.D. Total registration for 1930-1931 was 495; graduates, 127. The next session begins Sept. 16, 1931, except for the fourth year students who report for ward work on Aug. 31, 1931, and ends June 8, 1932.

Rochester

UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE, Elmwood Avenue and Crittenden Boulevard.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. The faculty is composed of 45 professors, 129 lecturers, assistants, instructors, etc., a total of 174. The work embraces a graded course of 4 years of 9 months each. Three years of collegiate work are required for admission. The total fees for each year are $400. The total registration for 1930-1931 was 158; graduates, 34. The Dean is George H. Whipple, M.D. The seventh session begins Sept. 21, 1931, and ends June 18, 1932.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 309-311 South McBride Street.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title resumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. The faculty is composed of 35 professors and 155 associate and assistant professors, lecturers and instructors, a total of 190. Two years of a recognized college course are required for admission. The course covers four years of thirty-four weeks each. The fees for each of the first three years are $500; for the fourth year, $510. The Dean is Herman G. Weiskotten, M.D. The total enrolment for 1930-1931 was 184; graduates, 36. The sixty-first session begins Sept. 25, 1931, and ends June 6, 1932.

NORTH CAROLINA

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Two years of collegiate work are required for admission. The faculty is composed of 9 professors and 3 instructors, a total of 12. The fees for each year are $250 for residents; nonresidents, an additional fee of $75. The Dean is I. H. Manning, M.D. The total registration for 1930-1931 was 80. The forty-sixth session begins Sept. 18, 1931 and ends June 2, 1932.

Durham

DUKE UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1925. The first class was admitted Oct. 1, 1930. Coeducational. The faculty is composed of 8 professors and 39 associate and assistant professors, lecturers, instructors and assistants, a total of 47. The entrance requirements are intelligence and character, plus seventy hours of college work, including two years each of chemistry and English, and one year each of biology, physics and mathematics. The academic year consists of four quarters of eleven weeks each. Students may either study four quarters each year, and if satisfactory will receive the M.D. degree after three calendar years, or three quarters in each year, and if satisfactory be graduated after four calendar years. The object of utilizing the summer quarters is to provide more time for longer postgraduate intern training. Duke University will grant the degree of Bachelor of Science to students who have completed satisfactorily 70 semester hours in Duke University or some other approved university, six quarters in the Duke University School of Medicine, creditable extra work and have written an acceptable thesis. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the committee on instruction that they will spend at least two years. The fees are $450 for each year of three quarters. The Dean is Wilburt C. Davison, M.D. Total registration for 1930-1931 was 52 freshmen and 18 juniors. The next session begins Oct. 1, 1931, and ends Sept. 4, 1932.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty, including the professors of chemistry, physics and biology, numbers 9 professors and 5 assistants, a total of 14. Sixty-two semester hours of collegiate work are required for admission. Only the first two years of the medical course are offered. After the completion of freshman and sophomore college work and two years of medicine, a certificate will be given. The B.S. degree in medicine will be given only after completion of three years of college work and two years of medicine. Each annual course extends over nine months. The fees for the first year are $220 and $225 for the second year. The Dean is Thurman D. Kitchin, M.D. The total registration for 1930-1931 was 54. The thirtieth session begins Sept. 15, 1931, and ends June 2, 1932.

NORTH DAKOTA

Grand Forks (University, P. O.)

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Two years' work in a college of liberal arts is required for admission. The fees are $75 each year for resident students and $150 for nonresidents. The faculty consists of 5 professors and 8 instructors, a total of 13. The Dean is H. E. French, M.D. The total registration for 1930-1931 was 60. The twenty-sixth session begins Sept. 15, 1931, and ends June 7, 1932.

OHIO

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Eden and Bethesda Avenues, Mount Auburn.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Two years of college work are required for admission. The faculty consists of 94 professors and 152 associates, assistants, etc., a total of 246. The course covers four years of eight months each. A year's internship in an approved hospital is also required. The total fees for the four years are, respectively, $360, $360, $360 and $380, and if not legal citizens of Cincinnati, $50 additional. The Dean is Arthur C. Bachmeyer, M.D. The total registration for 1930-1931 was 292; graduates, 60. The next session begins Sept. 21, 1931, and ends June 11, 1932.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 2109 Adelbert Road.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. The faculty includes 38 professors and 183 lecturers, assistants, etc., a total of 221. The curriculum embraces three years of eight and one-half months each and one year of eleven months. Graduation from an approved college or scientific school or equivalent, following completion of a course of at least three collegiate years is required for admission. The total fees for each of the four years are, respectively, $440, $425, $415 and $425. The Dean is Torald Sollmann, M.D. The total registration for 1930-1931 was 255; graduates, 58. The eighty-ninth session begins Sept. 17, 1931, and ends June 16, 1932.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Neil and Eleventh Avenues.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. The faculty consists of 52 professors and assistant professors, 75 lecturers, instructors, demonstrators, etc., a total of 127. Two years of collegiate work are required for admission. The course covers four years of 34 weeks each. Tuition fees are $196, $186, $186 and $196 each year, respectively, for residents of Ohio, and $105 more for nonresidents. The Dean is John H. J. Upham, M.D. The total registration for 1930-1931 was 343; graduates, 78. The next session begins Sept. 29, 1931, and ends June 14, 1932.

OKLAHOMA

Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. Beginning September, 1928, entire course has been given at Oklahoma City. The first class graduated in 1911. Coeducational since organization. It has a faculty of 30 professors and 81 lecturers, assistants, etc., a total of 111. Two years of college work are required for admission. The course covers four years of nine months each. Since 1928 the course has included a fifth year consisting of a hospital internship, which will effect graduates of 1933. An optional course of six years is offered for the degree of B.S. and M.D. The total fees for the four years are, respectively, $128, $95.50, $33 and $25.50. For students residing outside the State of Oklahoma there is a tuition fee of $200 per year. The Dean is LeRoy Long, M.D. (resigned). The total registration for 1930-1931 was 227; graduates, 43. The thirty-first session begins Sept. 21, 1931, and ends June 7, 1932.

OREGON

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. It has a faculty of 57 professors and 151 lecturers, assistants, etc., a total of 208. Entrance requirements are three years of college work or its equivalent. The course is four years of thirty-three weeks each. The total fees for the four years are, respectively, $200, $195, $190 and $190 for residents of Oregon, and $60 per year additional for nonresidents. The Dean is Richard B. Dillehunt, M.D. The total registration for 1930-1931 was 244; graduates, 59. The forty-fifth session begins Oct. 3, 1931, and ends June 13, 1932.

PENNSYLVANIA

Philadelphia

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 216 North Broad Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition two years devoted to a college course, including English and either French, German or Spanish, physics, chemistry and biology. It has a faculty of 59 professors and 79 lecturers, instructors, etc., in all, 185. The work covers four years of eight and one-half months each. Fees for each of the four years are, respectively, $350, $350, $300 and $300. The Dean is William S. Pearson, M.D. The total registration for the college year 1930-1931 was 502; graduates, 93. The eighty-third session begins Sept. 28, 1931, and ends June 9, 1932.

JEFFERSON MEDICAL COLLEGE, 1019 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually since 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 65 professors, associate and assistant professors and 168 associates, lecturers, demonstrators and instructors, a total of 233. Entrance requirements are a completed standard four-year high school of college preparatory course, or the equivalent, and in addition three years of work leading to a degree in an approved college of arts and science, including specified courses in physics, general and organic chemistry and biology, with laboratory work in each subject. The course of study covers four years of eight and one-half months each. The total fees for the four years are, respectively, $440, $430, $425 and $425. The Dean is Ross V. Patterson, M.D. The total registration for 1930-1931 was 581; graduates, 141. The one hundred and seventh session begins Sept. 23, 1931, and ends June 3, 1932.

THE TEMPLE UNIVERSITY SCHOOL OF MEDICINE, Broad and Ontario Streets.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. The faculty numbers 28 professors and 160 associates, assistants, etc., a total of 188. Three years of college work are required for admission. The fees for each of the four years, respectively, are $485, $455, $435 and $455. The Dean is William N. Parkinson, M.D. The total registration for 1930-1931 was 391; graduates, 64. The thirtieth session begins Sept. 30, 1931, and ends June 16, 1932.

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. The faculty consists of 75 professors, associate and assistant professors, and 273 lecturers, associates, instructors, etc., a total of 348. Three years of college work are required for admission, including courses in physics, biology or zoology, chemistry, including general inorganic, organic and analytical, English and French or German. The first class is limited to 120 students; third and fourth to 135 each. The course embraces four years study of thirty-three weeks each. The total fees are $500 each year, with a deposit fee of $15, a student health fee of $10 and a matriculation fee of $5. The Dean is William Pepper, M.D. Total registration for 1930-1931 was 495; graduates, 134. The one hundred and sixty-sixth session begins Sept. 28, 1931, and ends June 22, 1932.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Henry Avenue and Abbottsford Road, East Falls.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 31 professors and 53 assistants, lecturers, etc., in all, 84. Entrance requirements are a completed course in a standard secondary school, and in addition two years of collegiate work, including courses in physics, chemistry, biology, English and French or German. The curriculum covers four years of eight months each. Fees for each of the four years are, respectively, $388, $407, $432 and $454. The Dean is Martha Tracy, M.D. The total registration for 1930-1931 was 121; graduates, 24. The eighty-second session begins Sept. 23, 1931, and ends June 8, 1932.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. The faculty is composed of 21 professors and 190 associates, assistants, etc., 211 in all. Entrance requirements are two years of college work, including English, chemistry (inorganic and organic), physics and biology. The course of study is four years of eight and one-half months each. The total fees for the four years, respectively, are $415, $400, $400 and $410. The Dean is Raleigh R. Huggins, M.D. The total registration for 1930-1931 was 263; graduates, 61. The forty-sixth session begins Sept. 21, 1931, and ends June 8, 1932.

SOUTH CAROLINA

Charleston

MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Coeducational from 1895 to 1912, when privileges for women were withdrawn, but they were restored in 1917. It has a faculty of 35 professors and 39 lecturers, instructors, etc., a total of 74. The course covers four years of eight months each. The minimum requirements for admission are graduation from an approved four-year high school and satisfactory completion of two years of college work. The total fees are $185, $185, $190, $190 each year, respectively. The Dean is Robert Wilson, M.D. Total enrolment for 1930-1931 was 156; graduates, 41. The one hundred and second session begins Sept. 24, 1931, and ends June 2, 1932.

SOUTH DAKOTA

Vermilion

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1907. Coeducational since organization. Offers only the first two years of the medical course. Two years' work in a college of liberal arts is required for admission. The fees are $100 each year for residents and $150 for nonresidents. The faculty numbers 11. The Dean is George R. Albertson, M.D. The total registration for 1930-1931 was 45. The twenty-fifth session begins Sept. 14, 1931, and ends June 4, 1932.

TENNESSEE

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, 847 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. The faculty includes 74 professors and 139 assistants, instructors, etc., a total of 213. Entrance requirements are a high school education and ninety quarter hours of collegiate work. Students taking the two-year premedical course in Knoxville may secure the B.S. and M.D. degrees. The fees are: for the first quarter, $133.50; second to sixth quarters, $113.50 each; seventh to ninth quarters, $108.50 each; tenth to twelfth quarters, $118.50 each. For residents of the state the charge is reduced $50 each quarter. The administrative officer is Orren W. Hyman, Ph.D. Total registration for 1930-1931 was 402; graduates, 59. During the academic year 1931-1932, the quarters begin: July 7, Sept. 24, Jan. 2 and March 21.

Nashville

MEHARRY MEDICAL COLLEGE, 18th Avenue North and Heffernan Street. *Colored.*—This school was organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. The faculty is made up of 25 professors and 37 instructors, demonstrators, lecturers, etc., 62 in all. Two years' work in a college of liberal arts is required for admission. The work embraces four years of thirty-two weeks each. Tuition fees are, respectively, $250, $250, $250 and $260 each year. The President is John J. Mullowney, M.D. Total registration for 1930-1931 was 205; graduates, 44. The fifty-sixth session begins Oct. 1, 1931, and ends June 2, 1932.

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE, Twenty-First and Edgehill.—This school was founded in 1874. The first class graduated in 1875. Coeducational since September, 1925. The faculty consists of 77 professors and 114 lecturers, instructors, assistants, etc., a total of 191. For matriculation students must be seniors in absentia who will receive the bachelor degree from their college after having completed successfully at least one year of work in the school of medicine. The course covers four years of nearly nine months each. The total fees for the four years, respectively, are $315, $315, $315 and $320. The Dean is Waller S. Leathers, M.D. The total registration for 1930-1931 was 198; graduates, 51. The fifty-eighth session begins Sept. 22, 1931, and ends June 8, 1932.

TEXAS

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 810 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. Coeducational since organization. The first class graduated in 1901. The faculty consists of 66 professors and 66 instructors and assistants, a total of 132. Entrance requirements are two years of college work in addition to a four year high school education. The course is

four years of eight months each. The fees for each of the four years, respectively, are $312, $297, $282 and $287. The Dean is Walter H. Moursund, M.D. Total registration for 1930-1931 was 350; graduates, 72. The thirty-second session begins Sept. 28, 1931, and ends May 30, 1932.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, 912 Avenue B.—Organized in 1891. The first class graduated in 1892. Coeducational since organization. It has a faculty of 42 professors and 16 lecturers and instructors, a total of 58. The curriculum embraces four years of eight months each. The entrance requirement is two years of collegiate work in addition to a four-year high school education. The freshman class is limited to 100 students on a scholarship basis; Texans only are accepted. The total fees for the four years, respectively, are $82, $78, $66 and $80. The Dean is George E. Bethel, M.D. Total registration for 1930-1931 was 337; graduates, 73. The forty-first session begins Oct. 1, 1931, and ends May 31, 1932.

UTAH

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Coeducational since organization. Gives only first two years of medical course. Each course covers thirty-six weeks. Three years of collegiate work are required for admission. The medical faculty consists of 7 professors and 13 lecturers and assistants, a total of 20. The fees are $190 for the first year and $200 for the second year. The Dean is B. I. Burns, M.D. Total registration for 1930-1931 was 66. The twenty-fifth session begins Sept. 24, 1931, and ends June 5, 1932.

VERMONT

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. It has a faculty of 32 professors and 42 lecturers, instructors, preceptors, etc., a total of 74. Seventy-two hours of college work in addition to a four-year high school education is required for admission. The course of study covers four years of nine months each. For residents of Vermont the total fees are $300 each year. Nonresidents are charged an additional $75 each year. A student activity fee of $30 is charged all students not holding academic degrees or in attendance four years previously. The Dean is James N. Jenne, M.D. The total registration for 1930-1931 was 151; graduates, 31. The next session begins Sept. 18, 1931, and ends June 20, 1932.

VIRGINIA

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session 1920-1921. It has a faculty of 31 professors and 38 lecturers, instructors, assistants, etc., a total of 69. The requirements for admission are the completion of a four-year high school course, or its equivalent, and two years of college work devoted to English, mathematics, chemistry, physics and biology. For residents of Virginia the total fees for the four years, respectively, are $322.50, $300, $275 and $270. Nonresidents are charged an additional $20 each year. The Dean is J. Carroll Flippin, M.D. The total registration for 1930-1931 was 231; graduates, 47. The one hundred and eighth session begins Sept. 17, 1931, and ends June 14, 1932.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Twelfth and Clay Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. It has a faculty of 58 professors and 82 lecturers, instructors, etc., a total of 140. The requirements for admission is a four-year high school education and in addition two years of collegiate work, including courses in physics, chemistry, biology and English. The course embraces four years of eight months each. Total fees for the four years, respectively, are $300, $300, $292.50 and $322.50. Nonresidents are charged an additional $100 each year. The Acting Dean is Lee E. Sutton, Jr., M.D. The total registration for 1930-1931 was 365; graduates, 94. The ninety-fourth session begins Sept. 15, 1931, and ends May 31, 1932.

WEST VIRGINIA

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, and gives only the first two years of the medical course. Coeducational since organization. Sixty-four semester hours of college work are required for admission, and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 11 professors and 11 lecturers, instructors, assistants, etc., a total of 22. Fees: for residents of the state, $115 each year; for nonresidents, $365. The Dean is John N. Simpson, M.D. The total registration for 1930-1931 was 127. The next session begins Sept. 15, 1931, and ends June 7, 1932.

WISCONSIN

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL, 412 North Charter Street.—Organized in 1907. Gave only first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. For matriculation at least two years in a college of arts and science or an equivalent training are required, including one year of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology. It has a faculty of 58 professors and 58 lecturers, instructors, etc., a total of 116. Incidental and laboratory fees for both resident and nonresident students average about $150 per year. An additional fee of $50 is charged for nonresidents. The Dean is Charles R. Bardeen, M.D. The total registration for 1930-1931 was 309; graduates, 44. The twenty-fourth session begins Sept. 23, 1931, and ends June 21, 1932.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, 1848 N. Fourth Street.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. It has a faculty of 169. The entrance requirements are sixty-four semester hours of college work, including courses in physics, chemistry, biology, and a modern foreign language. The curriculum covers four years of eight and a half months each, and one year's internship in an approved hospital. The fees for the four years, respectively, are $364, $354, $354 and $339. The Dean is Bernard Francis McGrath, M.D. The registration for 1930-1931 was 257; graduates, 62. The twentieth session begins Sept. 28, 1931, and ends June 8, 1932.

PHILIPPINE ISLANDS

Manila

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE, 547 Herran Street, Ermita, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. In 1910 the title was changed to University of the Philippines College of Medicine and Surgery. Present title "College of Medicine" in 1923. A two-year collegiate course, French or German, is required for admission. The course extends over five years. In the fifth year the students serve as interns in the Philippine General Hospital. The Dean is Fernando Calderon, M.D.

UNIVERSITY OF ST. THOMAS FACULTY OF MEDICINE AND SURGERY, Manila.—University founded by papal decree in 1587. Medical department added in 1871. A two-year collegiate course is required for admission. The course of study is five years, including an internship in a hospital. The Dean is Jose L. de Castro, M.D.

CANADA

The Dominion of Canada has ten medical colleges, which provide either a six-year course, including courses in physics, chemistry and biology, or a five year medical course with one premedical year. This course is equal to that in the medical schools of the United States which require two years of college work for admission, including the science courses named.

Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Coeducational since organization. Has given the complete six-year medical course since 1924. The faculty includes 41 professors and 42 instructors, assistants, etc., a total of 83. Fees for each year are $220. The Dean is Allan C. Rankin, M.D. The registration for 1930-1931 was 144; graduates, 31. The nineteenth session begins Sept. 25, 1931, and ends May 13, 1932.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, Corner of Emily and Bannatyne, Winnipeg.—Organized in 1883 as Manitoba Medical College; first class graduated in 1885, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. The faculty includes 47 professors and 84 instructors, assistants, a total of 131. The total fees for the five years, respectively, are $260, $250, $260, $260 and $120. Matriculation requirements include two years of college work in the faculty of Arts and Science of a recognized university subsequent to the complete high school course required for entrance to the latter. The course extends over five years of eight months each. The Dean is S. Willis Prowse, M.D. Total registration for 1930-1931 was 239; graduates, 49. The next session begins Sept. 25, 1931, and ends May 28, 1932.

Nova Scotia

DALHOUSIE UNIVERSITY FACULTY OF MEDICINE, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the university and the board, and candidates may qualify at the same time for their academic degrees and the provincial license. First

class graduated in 1872. Coeducational since 1871. It has a faculty of 25 professors and 39 demonstrators, lecturers, etc., a total of 64. Requires for matriculation two years of Arts and a graded course of five years. The fees are $250 each year. The total registration in regular classes for 1930-1931 was 145; graduates, 23. The Dean is John Stewart, M.D. The next session begins Sept. 8, 1931, and ends May 10, 1932.

Ontario

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the university, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. It admitted women from 1880 until 1883. In 1892 the school again became a part of Queen's University. The faculty numbers 54. The fees for the six years are, respectively, $175, $183, $183, $208, $208 and $238. The last includes the fee of $30 for the M.D., C.M. degrees. The course covers six years of thirty teaching weeks each, the first including courses in physics, chemistry, biology, history or economics or English. The total registration in 1930-1931 was 303; graduates, 41. The Dean is Frederick Etherington, M.D. The next session begins Sept. 23, 1931, and ends May 25, 1932.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, London.—Organized in 1881 as the Western University Faculty of Medicine; first class graduated in 1883, and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The faculty numbers 71. Two years of premedical college work, including courses in physics, chemistry and biology, is required for admission to a four year medical course—all of which is referred to as a six year medical course. The total fees for the last four years, respectively, are $200, $200, $208 and $233. The Dean is A. B. Macallum, M.D. The registration for 1930-1931 was 141; graduates, 35. The next session begins Sept. 23, 1931, and ends May 27, 1932.

UNIVERSITY OF TORONTO FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The course of study covers six years of eight months each, the first two being devoted largely to physics, chemistry, biology and cultural courses in history, science and English. It has a faculty of 66 professors and 201 lecturers, associates, etc., a total of 267. The fees are $171 for the first year; for the second, $220; $300 for the third year; $220 for the fourth and fifth years, and $244 for the sixth year. The Dean is Alexander Primrose, M.D. The total registration for 1930-1931 was 792; graduates, 136. The next session begins Sept. 29, 1931, and ends May 21, 1932.

Quebec

MCGILL UNIVERSITY FACULTY OF MEDICINE, 3640 University Street, Montreal.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. Coeducational since 1919. The course consists of three premedical years, and five medical years of eight months each, the fifth being a year of hospital work. The faculty consists of 65 professors and 126 lecturers, etc., a total of 191. The total fees for each of the five medical years are $267. The total registration for 1930-1931 was 470; graduates, 100. The Dean is Charles F. Martin, M.D. The next session begins Sept. 16, 1931, and ends April 27, 1932.

UNIVERSITY OF MONTREAL FACULTY OF MEDICINE, 1265 St. Denis Street, Montreal.—Organized in 1843, incorporated in 1845 as the Montreal School of Medicine and Surgery. In 1891, by act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name by Act of Parliament in 1920. A class was graduated in 1843 and in each subsequent year. Coeducational since 1925. The faculty numbers 110. The course covers one premedical and five medical years, including a hospital internship. The total fees for each of the five years, respectively, are $239, $220, $257, $232 and $230. The Dean is Louis de Lotbiniere Harwood, M.D. The total registration for 1930-1931 was 185; graduates, 31. The next session begins Sept. 15, 1931, and ends June 15, 1932.

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 68. The fees for each of the medical years are $160, $170, $160, $160 and $180. The course covers one premedical year, including preliminary courses in physics, chemistry and biology, and five medical years. The Dean is Arthur Rousseau, M.D. Total registration for 1930-1931 was 254; graduates, 36. The next session begins Sept. 9, 1931, and ends May 25, 1932.

Saskatchewan

UNIVERSITY OF SASKATCHEWAN SCHOOL OF MEDICAL SCIENCES, Saskatoon.—Organized in 1926. Coeducational. Offers classes in first two years only following a minimum of two years' university work, mainly in physics, chemistry and biology. Students require three more years for graduation, making in all seven years from matriculation. The medical faculty includes 8 professors and 4 lecturers and assistants, a total of 12. The fees are $80 for each year. The Dean is W. Stewart Lindsay, M.D. The total registration for 1930-1931 was 35. The next session begins Oct. 1, 1931, and ends May 27, 1932.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are 15 units of high school work and two years (60 semester hours) of college work.

CURRICULUM: The entire course of four years shall consist of not less than 3,600 hours, and shall be grouped in divisions and subdivided into subjects, each division to be allotted approximately the time, on a percentage basis, as shown in the following schedule:

1.	Anatomy, including embryology and histology	14 –18½%
2.	Physiology	4½– 6 %
3.	Biochemistry	3½– 4½%
4.	Pathology, bacteriology and immunology	10 –13 %
5.	Pharmacology	4 – 5 %
6.	Hygiene and sanitation	3 – 4 %
7.	General medicine (neurology and psychiatry, pediatrics, dermatology and syphilis)	20 –26½%
8.	General surgery (orthopedic surgery, urology, ophthalmology, otolaryngology, roentgenology)	13 –17½%
9.	Obstetrics and gynecology	4 – 5 %
		76 – 100%
	Electives	24 – 0 %

STATE REQUIREMENTS OF PRELIMINARY EDUCATION

There are now forty-three states (counting Alaska Territory and the District of Columbia), either by law or board ruling or both, which have adopted requirements of preliminary education in addition to a standard four-year high school education. Of this number 39 now require the two year standard. These states, the number of college years required and the time the higher requirements became or become effective, are shown in the following table:

State Examining Board of	One Year of College Work		Two Years of College Work		A Hospital Internship	
	Affects Students Matriculating	Affects All Graduates	Affects Students Matriculating	Affects All Graduates	Affects Students Matriculating	Affects All Applicants
Alabama	.....	....	1915-16	1919	.....	....
Alaska	1914-15	1918	1918-19	1922	1912-13	1917
Arizona	1914-15	1918	1918-19	1922	.....	....
Arkansas [1]	1915-16	1919	1918-19	1922	.....	....
California	1915-16	1919	.....	....	.....	....
Colorado	1908-09	1912	1910-11	1914	.....	....
Connecticut	1915-16	1919	.....	....	.....	....
Delaware *	.....	....	.....	....	1919-20	1924
Dist. of Columbia	.....	....	1925-26	1929	1924-25	1929
Florida	1914-15	1918	1918-19	1922	.....	....
Georgia	.....	....	1918-19	1922	.....	....
Idaho	.....	....	1915-16	1919	.....	....
Illinois	1915-16	1919	1919-20	1923	1918-19	1923
Indiana	1910-11	1914	1911-12	1915	.....	....
Iowa	.....	....	1911-12	1915	1919-20	1924
Kansas	1910-11	1914	1918-19	1922	.....	....
Kentucky	1914-15	1918	1918-19	1922	.....	....
Louisiana	1915-16	1919	1918-19	1922	.....	....
Maine	1915-16	1919	1916-17	1920	.....	....
Maryland	1914-15	1918	1918-19	1922	.....	....
Massachusetts *	.....	....	.....	....	.....	....
Michigan	1914-15	1918	1918-19	1922	1917-18	1922
Minnesota	.....	....	1908-09	1912	.....	....
Mississippi	1915-16	1919	.....	....	.....	....
Missouri *	.....	....	.....	....	.....	....
Montana	1914-15	1918	1918-19	1922	.....	....
Nebraska *	.....	....	.....	....	.....	....
Nevada *	.....	....	.....	....	.....	....
New Hampshire	1914-15	1918	1915-16	1919	.....	....
New Jersey	1915-16	1919	1917-18	1921	1911-12	1916
New Mexico	1914-15	1918	1918-19	1922	.....	....
New York	1917-18	1921	1918-19	1922	.....	....
North Carolina	1914-15	1918	1918-19	1922	.....	....
North Dakota	.....	....	1908-09	1912	1913-14	1918
Ohio *	.....	....	.....	....	.....	....
Oklahoma	1914-15	1918	1917-18	1921	.....	....
Oregon	.....	....	1920-21	1924	.....	....
Pennsylvania	1914-15	1918	.....	....	1909-10	1914
Rhode Island	1914-15	1918	1918-19	1922	1912-13	1917
South Carolina	.....	....	1918-19	1922	.....	....
South Dakota	1908-09	1912	1911-12	1915	1920-21	1925
Tennessee	1916-17	1920	1918-19	1922	.....	....
Texas	1914-15	1918	1926-27	1930	.....	....
Utah	1913-14	1917	1922-23	1926	1921-22	1926
Vermont	1913-14	1917	1918-19	1922	.....	....
Virginia	1914-15	1918	1917-18	1921	.....	....
Washington	1914-15	1918	1918-19	1922	1914-15	1919
West Virginia	1917-18	1921	1921-22	1925	1927-28	1932
Wisconsin	.....	....	1915-16	1919	1922-23	1927
Wyoming †	.....	....	.....	....	1926-27	1931

* Require a four-year high school education or its equivalent.
† No fixed standard.
1. The higher standard in Arkansas evidently is not enforced by the sectarian licensing boards of that state.

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SATURDAY, AUGUST 29, 1931

MEDICAL EDUCATION IN THE UNITED STATES

This week for the thirty-first consecutive year THE JOURNAL publishes statistics regarding medical education in the United States. These include not only the figures on medical education proper but also data regarding premedical education and the internship. The figures which have been collected show that again the great majority of the freshmen in medical schools came from accredited colleges. Of the 626 freshmen accepted from other institutions, 242, or 38.6 per cent, had obtained baccalaureate or higher degrees, and 46 per cent of the total number of freshmen presented baccalaureate or higher degrees.

One new medical school began instruction in the session of 1930-1931 (Duke University School of Medicine) and two of the schools which formerly offered only the first two years of the medical course will add the clinical years this fall (University of Southern California School of Medicine and University of Missouri School of Medicine). A merger of significance to graduate medical education took place when, in July, the New York Post-Graduate Medical School and Hospital became a part of Columbia University.

An interesting development of the past year in medical education was the enrolment of large numbers of American students in foreign medical schools. The total number reported to have been enrolled in 90 European schools up to the time this issue went to press was 663. There were 277 registered in 8 Canadian medical schools. That this migration of American students is a new development is evident from the small number of students reported to have graduated from foreign schools last year. An explanation may be found in the statistics on medical education published in the last few years, which show that the number of students admitted to the American medical schools each year is becoming more and more a constant figure. A large proportion of the students who go abroad probably are influenced by the difficulties encountered in securing admission to American medical colleges and by the present low cost of transportation and living abroad. Presumably, most of these students expect to return to the United States to practice. In view of the figures published last year, which showed that the United States had the largest relative supply of physicians of any country, there seems no immediate need for a larger number of medical graduates than the American colleges are able to supply.

This year, the reports on internships were kindly contributed by officials of hospitals approved for internships. Every one of the 664 hospitals, offering 6,124 internships, submitted a report. Last year the reports came from former interns. Interest was demonstrated in clinical pathologic conferences, the securing of necropsies, medical libraries and dispensary service. The efforts of the Council to place these internships on a distinctly educational basis have indeed borne fruit.

The Council on Medical Education and Hospitals has numerous well known activities in the field of medical education. It functions with one object in view and that is to advance and improve medical education, that the public may continually have an adequate number of well trained physicians.

VITAMIN A IN THE RETINA

The mention of pigments in living organisms ordinarily brings to mind the varied colors of plants and their flowers rather than the colored compounds in tissues and body fluids of animals. Nevertheless pigmented compounds do occur throughout the body and either by their own virtue or because of accompanying substances they are of considerable significance. The characteristic behavior of hemoglobin in combining with oxygen in the lungs and releasing it in the tissues together with its concomitant change in base binding power is of fundamental importance to life. The pigment in the urine bears some relationship to the metabolism of the organism, the quantity excreted daily being augmented with an increased metabolism and diminishing when the metabolism is decreased. The bile pigments usually are looked on as hemoglobin which has been altered prior to excretion by the liver, but there are data which suggest that these compounds exert an influence on calcium metabolism. Exposure of the skin of white persons to ultraviolet rays is followed by the development of pigment which may be looked on as a protective mechanism tempering the photochemical effects of this light of short wavelengths.

Another colored material normally found in the body of vertebrates is the visual purple in the rods of the retina. Although apparently not indispensable for vision, its function seems to be connected with its behavior toward light; under ordinary conditions it is bleached by light but is constantly being regenerated. In a recent study by Yudkin, Kriss and Smith,[1] attention

1. Yudkin, A. M.; Kriss, M., and Smith, A. H.: Am. J. Physiol. 97: 611, 1931.

has been called to the remarkable nutritive properties of the retina. These investigators used pig eyes and showed that the retinal tissue was extraordinarily potent as a source of vitamin A. However, the heavily pigmented choroid coat from traces of which the retina could not be separated proved to be without effect when assayed for this food factor. The authors point out that, just as the carotene of plants has been suggested as the parent substance for vitamin A, so the pigment of the retina may be generically related to this dietary essential. The close relation between vitamin A and the retinal pigment is further shown by studies of Fredericia and Holm,[2] who observed a delay in regeneration of visual purple in animals deprived of vitamin A in the diet. It has also been demonstrated that hemeralopia occurs as a result of a deficiency of this dietary factor.[3] It is possible that in the retina there occurs a reversible reaction, vitamin A being required for the production of the retinal pigment and this, under proper conditions, producing vitamin A.

The available data bearing on the relationship between nutrition and normal function of the eye emphasize strongly the dependence of this organ on the presence of adequate amounts of vitamin A. The structural changes in the para-ocular glands and tissues and in the cornea itself constitute one of the most useful criteria for the lack of this food essential. It now appears that certain functional ocular disturbances can be correlated not only with a sufficiently high concentration of vitamin A in the tissues of the body as a whole but to some extent also with the localization of this factor or its precursor in the retina itself.

REPORTING COMMUNICABLE DISEASES

Without adequate reporting of notifiable diseases, public health authorities cannot effectively prevent or control disease. The knowledge of when the cases occur, where the cases are located, and the conditions under which they are occurring is fundamental. Several efforts have been made to establish an area for reporting disease. As early as 1902 the suggestion was made, but progress has been slow. Every state has adequate laws requiring the reporting of communicable diseases, and in almost every state there is local machinery for transmitting these reports to the state health authorities. The success and accuracy of the reporting of disease depends almost entirely, however, on the practicing physician. The greater part of this burden, of course, would fall on the general practitioner; but a number of specialists see cases of reportable diseases. The fact that a physician is a specialist does not relieve him of his legal and moral responsibility to report notifiable diseases.

The latest step toward more complete and adequate reporting is the unanimous approval, by the Conference of State and Territorial Health Officers, which met in Washington, D. C., during April, of a proposed plan for the establishment of a morbidity reporting area under the auspices of the United States Public Health Service. The plan suggested by the United States Public Health Service is based on the facilities of the health departments for collecting reports of cases of notifiable diseases and on the case fatality rates for five diseases for the past three years. The requirements are as follows:

1. Inclusion in the registration area for deaths and births.
2. Adequate legislation to enforce reporting.
3. Machinery for securing reports and keeping records.
4. A clerical force sufficient to do the work required.
5. A willingness to cooperate in efforts to secure more nearly accurate and more complete records of morbidity.

An analysis of the reports received from the various state health departments was made by the Public Health Service on the basis of the case fatality rates. The diseases used in this analysis were diphtheria, measles, scarlet fever, typhoid and whooping cough. For each year a fatality rate for each disease was calculated, based on all cases and deaths reported to the Public Health Service by all states that were in the registration area for deaths. This gave fifteen standards, each of which was practically the average fatality rate for one year for one disease in the entire death registration area.

The percentages of each state for the past three years were averaged and then these separate averages for the five diseases were again averaged. This gave a single percentage for each state, which percentage was based on the fatality rates for three years for the five diseases. States showing a general average of more than 100 per cent—that is, having better reporting than the average—as indicated by the fatality rates, were graded as "standard," while those states falling below the average of 100 per cent were classed as "below standard." Equal weight was given to the fatality rates for each of the five diseases. It is encouraging to note that twenty-four states were above the average number of cases reported for each death and were accordingly rated as "standard." Twenty-one states were below the average number of cases reported for each death and were rated "below standard." For four states the data were incomplete. The average number of cases for each death for the three years is as follows: diphtheria, 11 cases; measles, 106 cases; scarlet fever, 78 cases; typhoid, 5 cases; whooping cough, 26 cases.

This plan is not entirely above criticism. Many authorities contend that fatality rates are so variable that these alone should not be used as a yardstick in measuring the prevalence of disease. There is some evidence to substantiate this fact. However, the problem of improving the reporting of disease and the establishment of standards therefor is extremely complicated. It appears that, at least for the present, some such plan as mentioned is the most practicable that can

2. Fredericia, L. S., and Holm, Ejler: Am. J. Physiol. **73**: 63 (June) 1925.
3. Holm, Ejler: Am. J. Physiol. **73**: 79 (June) 1925.

be put into effect. Physicians everywhere should cooperate with public health authorities in the submission of reports of notifiable diseases. With some effort, practically all the states can soon reach the required standards, be admitted into the morbidity reporting area, and thus aid in more complete reporting.

Current Comment

VARIATIONS IN VITAMIN C CONTENT OF FOODS

After Holst and Fröhlich had shown that scurvy can be produced in guinea-pigs by feeding a limited diet now recognized to be deficient in vitamin C, the way was opened for the study of the distribution of this factor, of its properties and even of its chemical and physical nature. It is now generally accepted that the antiscorbutic vitamin occurs in largest quantities in raw fruits and vegetables. However, there are differences in the efficacy of different plants in this respect. In spite of the classic use of lime juice as a cure for scurvy, lemons have been shown to be superior in this regard. Cabbage and spinach are highly efficacious in preventing and curing the disease. Kohman, Eddy and Gurin [1] have recently shown that carrots, celery and head lettuce, all of which are commonly used in the raw state for salads, are inferior as sources of vitamin C to commercially canned turnip greens, the latter approaching spinach in antirachitic potency. Not only are there variations between different fruits and vegetables, but Zilva and his co-workers [2] have demonstrated that differences in vitamin C content exist between varieties of apples in spite of close similarities in character of fruit and season of maturing. It was found that the antiscorbutic potency of the apple was not influenced by the age of the tree, the character of the soil or the season when harvested. One variety of apple rich in vitamin C was stored for five months at 3 C. without diminution of antiscorbutic potency; likewise no loss was demonstrated after freezing and storing at — 20 C. for four months. Cooking for fifty minutes at 115 C. did not cause any loss if the skin was intact. This apple, ordinarily ripe in October, showed no difference in antiscorbutic power when picked green in July, demonstrating that in this fruit ripening is attended by little change in concentration of vitamin C though, of course, an increase in absolute quantity occurred. This food factor is not evenly distributed throughout the fruit; the skin is six times richer than the pulp at the core and three times richer than the pulp immediately beneath it; the pulp immediately beneath the skin contains more of the antiscorbutic factor than that near the core. The foregoing facts demonstrate that, whereas fruits and vegetables are generally effective in curing or preventing scurvy, there are marked differences not only between various species but also between varieties within a species. A further investigation of correlations of vitamin content with circumstances of genetics and cultural practice will undoubtedly add much to our knowledge of the accessory food factors, a topic that continues to present problems to the investigator.

1. Kohman, E. F.; Eddy, W. H., and Gurin, C. Z.: J. Indust. & Engin. Chem. **23**: 808, 1931.
2. Bracewell, M. F.; Hoyle, E., and Zilva, S. S.: Biochem. J. **24**: 82, 1930. Bracewell, M. F.; Kidd, F.; West, C., and Zilva, S. S.: Ibid. **25**: 138, 1931.

SOME NONRACHITIC BONE DEFECTS

Rickets and related disorders have attained prominence in recent years not only in the medical clinic but also in discussions by the public. This interest has been stimulated by the demonstrations of methods of inducing rickets experimentally in animals so that the manifestations and the requisite treatment might be more effectively investigated. Then the discovery that the lack of ultraviolet radiation may become the cause of rickets, and that suitable irradiation prevents or relieves the symptoms, aroused enthusiastic consideration everywhere of the rickets problem. A. F. Hess [1] has remarked that our concept of rickets may be divided broadly into two periods, the one, which may be termed the clinical and pathologic era, comprising the long span between 1650 and 1918, and the other, that of the "newer rickets," embracing the subsequent period. The latter, which still is in fruition, is a by-product of the discovery of the vitamins. One consequence of this progress has been the widespread dissemination of information, so that the manifestations of rickets are commonly recognized: changes in the cranial bones—craniotabes; beading of the ribs in the form of the "rachitic rosary," and other thoracic deformations; deformities of the extremities, with enlargement of the epiphyses; and various other "signs." The mention of "soft chest" or "flat head" or "flat foot" is more than likely to bring rickets into the consideration of causation. One danger in all this ultramodern familiarity with a widespread, physique-distorting malady lies in the resultant tendency to offhand diagnosis. Hence it seems particularly timely to point out that many assumed rachitic symptoms do not warrant the diagnosis of rickets. As Hess remarks, it is not so many years since this word was used to include a motley aggregation: congenital syphilis, infantile scurvy, osteopsathyrosis or fragilitas ossium, chondrodystrophy, osteitis fibrosa and other pathologic states of the bone. Accordingly, attention has been directed anew to a peculiar nonrachitic softening of the ribs that may result in the sinking or flattening of the walls of the chest in children and may persist into adult life.[2] A pronounced flattening of the occiput is often noted; it is due to pressure and may persist for years. Bowing of the legs and flat foot are sometimes associated with these deformities. These symptoms occur without roentgenographic abnormalities of a rachitic character; the calcium-phosphorus levels and ratios in the blood may be normal. Familiar antirachitic treatment does not effect a cure. Diet seems to be unavailing in attempts to alleviate the condition. Hess, who has observed and described a number of these anomalous cases, concludes that the syndrome consisting of flat head and soft chest does

1. Hess, A. F.: Rickets, Osteomalacia and Tetany, Philadelphia, Lea & Febiger, 1929.
2. Hess, A. F.: Nonrachitic Soft Chest and Flat Head—A New Syndrome, Am. J. Dis. Child. **41**: 1308 (June) 1931.

not belong in the category of rickets and should be differentiated from this disorder. In his judgment it is a form of osteoporosis that may be of congenital origin.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts at 10 a. m. on Monday and 10:30 a. m. on Saturday, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week is as follows:

August 31. Athletics and Your Boy.
September 5. Tonsils and Adenoids.

Five minute health talks may be heard over the Columbia Broadcasting System on Monday, Wednesday, Thursday and Saturday, from 1 to 1:05 p. m., Chicago daylight saving time.

The program for the week is as follows:

August 31. How Much Does the School Child Hear?
September 2. How to Develop a Healthy Mind.
September 3. Physically Fit.
September 5. The Child's Right to Live.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALASKA

Medical Election.—Dr. Leonard P. Dawes, Juneau, was elected president, July 1, of the Alaska Territorial Medical Association; Dr. Frank R. De La Vergne, Fairbanks, was made president-elect, and Dr. Harry C. DeVighne, Juneau, reelected secretary.

CALIFORNIA

Personal.—Dr. Neal N. Wood, Los Angeles, has been appointed medical director of the Los Angeles County General Hospital with the exception of the osteopathic unit. Mr. Norman R. Martin has been appointed executive superintendent of the institution.

Drugless Practitioner Sentenced.—George D. Gillespie, licensed drugless practitioner, in a jury trial, June 11, was found guilty of second degree murder, arising from an alleged illegal operation. He was sentenced, June 15, to serve from five years to life, but, on account of his advanced age, sentence was suspended pending good behavior.

Right to Refuse Physical Examination.—An opinion relative to the right of the health officer to enter school property in order to institute measures for the control of communicable diseases was recently issued by Hon. U. S. Webb, attorney general of California. The opinion involved the interpretation of section 1.120 of the school code, which reads as follows:

A parent or guardian having control or charge of child enrolled in the public schools may file annually with the principal of the school in which he is enrolled a statement in writing, signed by such parent or guardian, stating that he will not consent to the physical examination of his child provided for in this chapter, and thereupon such child shall be exempt from any physical examination, but whenever there is a good reason to believe that such child is suffering from a recognized contagious or infectious disease, such child shall be sent home and shall not be permitted to return until the school authorities are satisfied that such contagious or infectious disease does not exist.

It was stated that if the health authorities had a reasonable ground, through information given by a health officer or any other source, for believing that a child was suffering from diphtheria, it would be not only the right but the duty of the school trustees to exercise the authority as specified in the code to protect the other children in the school. It was further stated that no one parent, or guardian, or child has any right in the premises, the exercise of which would endanger the health and the lives of other children in the school.

CONNECTICUT

Midwife Fined.—Margreita DiGenova, a midwife of Bridgeport, was found guilty of practicing medicine and surgery without a license, June 7; on one count she was fined $100 and costs, and on another, $25.

Dr. McCartney Goes to New York.—Dr. James L. McCartney, Hartford, who has been director of the bureau of mental hygiene of the Connecticut State Department of Health since 1929, has been appointed psychiatrist with the New York State Department of Correction, and after September 15 will be stationed at the state reformatory at Elmira, N. Y. Dr. McCartney formerly was assistant instructor in neurophysiology at Peiping Union Medical College and assistant physician in psychiatry in St. Elizabeth's Hospital, Washington, D. C.

DISTRICT OF COLUMBIA

Dr. Morgan Appointed Dean at Georgetown University.—At a meeting of the university directors, August 21, Dr. William Gerry Morgan, professor of gastro-enterology, was unanimously elected dean of the Georgetown University School of Medicine. He will continue as a regent of the university. Dr. Morgan, who has been a member of the faculty of the school of medicine for more than twenty years, was President of the American Medical Association in 1930-1931. He is an associate editor of the Tice System of the Practice of Medicine. In 1913, he was president of the American Gastro-Enterological Association, and, in 1919, president of the Clinico-Pathological Society and of the Medical Society of the District of Columbia.

ILLINOIS

Rabies.—Forty-eight dog heads were examined by the state diagnostic laboratory during the first twenty-eight days of July; thirteen of these heads were positive for rabies. In July, 1930, twenty-nine heads were examined, with four positive. According to the state health department, these statistics indicate that rabies is more prevalent this year. During July, the state department of health provided free Pasteur antirabic treatment to 374 people who had been bitten by dogs reputed to be rabid.

Chicago

Cancer Clinic at County Hospital.—A cancer clinic has been in operation for the last three months at Cook County Hospital. Through its work an effort will be made to correlate all the therapeutic measures of any importance in the treatment of cancer in an attempt to select the one best adapted to individual cases. A follow up of each patient is made. Space has been made available on the fifth floor of the hospital for this work, which will be carried on under the general supervision of the hospital and the Cook County Training School. The heads of the departments under which the work was inaugurated are Drs. Henry Schmitz, gynecology; Karl A. Meyer and William Hendricks, surgery; Frederick Tice and Alexander A. Goldsmith, medicine; Harry B. Culver, genito-urinary diseases; George F. Suker, eye, ear, nose and throat; Chester H. Warfield, roentgenology, and Richard H. Jaffe, pathology.

Conference on Child Health.—A White House Conference on Child Health and Protection will be held at the Palmer House, October 30-31, with a view to giving widespread effect in the Chicago area to the "children's charter" adopted last year at the conference in Washington. It is planned to have five divisions: medical service, headed by the Chicago Medical Society; public health service, Dr. Herman N. Bundesen, commissioner of health; education and training, Charles H. Judd, LL.D., director of the school of education, University of Chicago; child welfare, Miss Sophonisba P. Breckenridge, Samuel Deutsch professor of public welfare administration at the university, and community planning for child health and welfare, Wilfred S. Reynolds, director of the Chicago Council of Social Agencies. Many speakers of national importance will be on the program, including Dr. Ray Lyman Wilbur, secretary of the interior, Washington, D. C.

INDIANA

Society News.—Dr. William C. Caldwell, Evansville, addressed the Gibson County Medical Society, Princeton, August 10, on "The Laboratory's Place in Clinical Diagnosis."

Short Courses on Tuberculosis.—A series of two-day courses on tuberculosis is offered to Indiana physicians by the Indiana Tuberculosis Association, beginning September 1-2 and concluding October 13-14. The instruction will be given at seven sanatoriums in various parts of the state with the following physicians in charge: Drs. Edward M. Amos, Indianapolis; Paul D. Crimm, Evansville; St. Clair Darden, South

Bend; Carl V. Davisson, La Fayette; Merlin H. Draper, Fort Wayne; Alfred Henry, Indianapolis; Walter H. Mytinger, La Fayette; Jerome V. Pace, Rockville; James O. Parramore, Crown Point; Herbert V. Scarborough, Oaklandon, and James H. Stygall, Indianapolis. Subjects to be treated include laboratory aids, history, clinical study, physical examination, treatment, differential diagnosis and childhood tuberculosis. No fees are to be charged.

IOWA

Diploma Lost.—Dr. John Mathew K. Miles, Lansing, has reported that his diploma from Northwestern University Medical School, dated 1929, and his certificate of internship from Charity Hospital, New Orleans, were stolen from his automobile, August 15.

Society News.—The Appanoose County Medical Society, in joint meeting with the woman's auxiliary, was addressed, June 26, at Centerville by Drs. William Rankin and Frank B. Dorsey, Sr., Keokuk, on "Prenatal Care and Obstetrics" and "Surgical Deliveries," respectively.——Dr. James F. Weir, Rochester, Minn., addressed the June 24 meeting of the Northeastern Iowa Medical Association at Strawberry Point on "Jaundice, Causes and Treatment," and Dr. Henry C. Hesseltine, Iowa City, "Obstetrics in the General Practice of Medicine."

KANSAS

County Society Employs Executive Secretary.—Mr. Mac Cahal was recently appointed executive secretary of the Sedgwick County Medical Society, Wichita, it is reported. The Sedgwick County Medical Society is composed of 165 active members and is said to be the smallest medical organization employing a full time secretary.

State Society Publishes Magazine.—The first issue of *Folks* appeared early in August as a result of the decision of the Kansas Medical Society at its annual meeting in Manhattan, May 5-7, to have its bureau of public relations publish a monthly health magazine for the public. The first issue includes articles on cancer, tuberculosis, typhoid, and other subjects. There is also a section for children. Dr. William E. McVey, Topeka, executive secretary of the bureau of public relations, is manager of the publication.

MINNESOTA

Basic Science Violator Receives Suspended Sentence.—Charles Lobac, who claimed to be a barber from Fresno, Calif., pleaded guilty to violating the basic science law, August 6, in St. Paul. The defendant sold a preparation called "Radian," which was alleged to cure various diseases, for $1 per bottle. The state board reports that the defendant, after spending six days in the county jail, entered a plea of guilty and was sentenced to thirty days in the workhouse. The sentence was suspended after Lobac made a plea to the court that he be given a chance to leave the state and work in the harvest fields.

NEW MEXICO

Personal.—Dr. William C. Brice, Silver City, was recently appointed health officer of Grant County, succeeding Dr. Nathaniel D. Frazin.——Dr. Fred D. Vickers, Deming, has been appointed health officer of Luna County to succeed the late Dr. John O. Hatcher.

State Director of County Health Work Appointed.—Dr. Joseph P. Kane, New York City, has been appointed director of county health work in the state bureau of public health, a position reestablished with the aid of the Commonwealth Fund of New York after a lapse of some time. Dr. Kane, who received his medical degree at the University of Minnesota Medical School, Minneapolis, in 1905, has been in public health work for many years, most recently with the American Public Health Association.

NEW YORK

Patients in Mental Hospitals Not Entitled to Vote.—At the request of the department of state, Attorney General Bennett rendered an opinion, July 24, to the effect that patients in institutions for the care of the insane, whether under state or federal jurisdiction, were not entitled to vote at elections. It was stated in the opinion that there were no specific provisions one way or the other in the constitution of the United States, the constitution of the state of New York, or the statutes of the state with respect to the right of an incompetent or insane person to vote.

Course for Health Officers at Syracuse.—A course for health officers will be given at Syracuse University under the direction of Dr. Frederick W. Sears, district state health officer, beginning September 15 and continuing intermittently until December 2. The diagnosis and treatment of communicable diseases will be stressed. Other subjects will include the bacteriology of milk and water, rural hygiene, practical epidemiology, relation of physicians to rural school inspection, and prenatal and infant welfare programs as carried out by the state health department. Members of the staffs of Syracuse University and of the state department of health will assist in conducting the course.

Campaign to Eliminate Stream Pollution.—Nine cities and villages, including Buffalo, have been asked to submit to Governor Roosevelt by November 1 plans for some method of sewage disposal as part of an effort to stop the pollution of Lake Erie and the Niagara River. The state has embarked on a campaign to end the pollution of streams by state institutions. Investigations made by the division of sanitation of the state department of health at the request of the governor disclosed that nineteen state institutions either had no sewage treatment plants or had imperfectly functioning ones. Appropriations have been made to cover the cost of the work at several of the plants, some of the projects have been completed, and it is believed that by 1934 all the recommended work will have been finished.

Health Officers Authorized to Pay for Treatment of Venereal Cases.—The state department of health has made it possible for any person in upstate New York who is infected with either syphilis or gonorrhea, and who is unable to pay for treatment until cured or rendered permanently noninfectious, to receive free medical care whether he resides in an urban or a rural district. It was pointed out that the possibility of receiving pay for the care of indigent patients is of considerable interest to the medical profession since every year many physicians treat cases of this kind without compensation. According to *Health News*, this is unnecessary, for the physician may arrange with his local health officer for his honorarium before initiating treatment. The word indigent, in this connection, means that the person is unable to pay for continuous treatment as long as would be necessary to protect the public and to safeguard himself against possible sequelae. A venereal disease clinic has been started on the Onondaga Indian Reservation, the first meeting being held, July 29. Dr. Herman E. Gak is the clinician. The village of Ossining, Westchester County, opened a venereal disease clinic, August 1. Dr. Robert R. Bloom, health officer, is the clinician.

New York City

Infantile Paralysis Wanes.—A summary of cases of infantile paralysis reported during the week ended August 22 showed 422 cases, a decrease of 90 from the previous week. Of 2,247 cases that have developed in the city since January 1, all but 34 have occurred since July 1. The state department of health reported that 295 cases had been recorded outside of New York City since January 1. In Westchester County 26 cases were reported, almost three times the number for the previous week. Nassau County had 25 cases during the week and 26 the week before.

Lectures at Mount Sinai Hospital.—A series of lectures will be held in the auditorium of Mount Sinai Hospital in connection with the graduate fortnight of the New York Academy of Medicine, October 19-30. Sir Thomas Lewis, London, will deliver the Janeway Lectures, October 24, on "Ischemic Paralysis," and October 26, on "Thrombo-Angiitis Obliterans," with clinical demonstrations. Dr. Frank N. Wilson, professor of internal medicine, University of Michigan Medical School, Ann Arbor, will present four lectures on electrocardiographic studies, October 19-22.

Typhoid in the Bronx.—Sixteen cases of typhoid, with five deaths, that occurred in the Mount Hope section of the Bronx between May 18 and June 10 have been traced to a delicatessen store in the neighborhood. No history of typhoid infection could be found among the persons employed in the store, but investigation finally brought out the fact that the storekeeper's mother frequently visited him and helped with the work. It appeared likely that the source of the infection was potato salad, purchased from the store, May 10, when the mother of the proprietor had visited him. It was found that she had washed the utensils used in preparing the salad, transferring the food from one platter to another. Although the woman said that she had not had typhoid, bacteriologic examination showed that she was a carrier.

Faculty Changes at Cornell Medical Center.—Dr. Graham Lusk, professor of physiology at Cornell University Medical College since 1909, will retire in 1932 when the new medical center of New York Hospital and Cornell University Medical

College is opened. Dr. Herbert S. Gasser, professor of pharmacology at Washington University School of Medicine, St. Louis, will succeed Dr. Lusk. James M. Neill, Ph.D., now professor of bacteriology and immunology at Vanderbilt University School of Medicine, Nashville, Tenn., has been appointed professor of bacteriology and immunology to succeed Dr. William J. Elser, who will remain with the center, however, as head of the department of applied pathology and bacteriology. A fourth appointment announced is that of Dr. George S. Amsden, at present professor of psychiatry at the New York Post-Graduate Medical School, as professor of psychiatry to open a new department of psychiatry in association with Dr. William L. Russell.

NORTH CAROLINA

Society News.—The Mecklenburg County Medical Society is operating a physicians' exchange in Charlotte under the direction of a committee of which Dr. Robert W. McKay is chairman.——Dr. Christopher Johnston, Durham, addressed the Gaston County Medical Society, Gastonia, July 6, on complications of diabetes.

OHIO

Society News.—Drs. Glenn K. Dennis and Robert Conrad addressed the Clinton County Medical Society, Wilmington, August 11, on acute infections of the inner ear, and nephritis, respectively.——Dr. Fred G. Maurer, Lima, addressed the Putnam County Medical Society, Pandora, August 5, on diabetes and its treatment.

Health Exhibit at State Fair.—The entire medical and nursing personnel of the state department of health will be on duty with the health exhibits at the state fair, August 31-September 5. Work of all the divisions of the department will be shown in a special exhibit, of which the principal feature will be moving pictures illustrating all phases of public health work. Charts and pamphlets on personal and public hygiene will be distributed, and charts and statistical tables showing the distribution of diseases, the resultant mortality and birth and death records will be displayed. Members of the department staff will be in service at the Red Cross first aid station and will conduct physical examinations of members of 4-H clubs.

PENNSYLVANIA

State Medical Meeting at Scranton, October 5-8.—The eighty-first annual meeting of the Medical Society of the State of Pennsylvania will be held at Scranton, October 5-8, under the presidency of Dr. William H. Mayer, Pittsburgh. Among the guest speakers will be Drs. George R. Minot, Boston, whose subject will be "Treatment of Anemia"; Sydney R. Miller, Baltimore, "Contemporary Fads and Fallacies, Therapeutic and Diagnostic, Which Represent Dangerous Professional Credulity"; John M. T. Finney, Baltimore, "Diagnosis, Etiology and Treatment of Peptic Ulcer"; Louis Hamman, Baltimore, "Diagnosis of Obscure Fever"; Edward Francis, Washington, "Tularemia"; James Dellinger Barney, Boston, "Conservative Surgery of the Kidney"; Lee M. Hurd, New York, "Some Phases of Accessory Sinus Disease"; Charles J. White, Boston, "Methods That Have Proved Successful in the Treatment of Some of the Common and Obstinate Skin Diseases," and Nathaniel P. Rathbun, Brooklyn, "Surgical Complications of Prostatics." There are to be symposiums on peritonitis, circulatory disorders, brain tumors, diseases of the upper part of the abdomen, bone marrow reactions, allergy, anesthesia, maxillofacial surgery, mental hygiene in childhood, focal infection in children, and diseases of the bladder. Groups of case reports will be presented before the scientific programs in several section meetings. A clinic for members of the section on pediatrics will be held at St. Joseph's Children's and Maternity Hospital, and Drs. William D. Whitehead and Samuel Gross, Scranton, will conduct a dermatologic clinic for the section on dermatology.

TENNESSEE

Meharry's New Plant Completed.—Meharry Medical College will open the college year, October 1, in its new plant, which has just been finished at a cost of $2,000,000 (THE JOURNAL, June 7, 1930, p. 1849). The new school, which covers six city blocks, has accommodations for 225 medical students, 130 dental students, 100 pharmacists, 60 nurses and 12 dental hygienists. The schools of medicine, dentistry, nursing and pharmacy and the hospital are in the main building. The remainder of the group includes a public health lecture hall, a nurses' home and a boiler house that contains also laundry equipment for the hospital and facilities to care for animals used in experimentation. The hospital has a capacity of 150 beds and an outpatient department through which 10,000 patients may be cared for in the course of a year. A department for the training of dental hygienists will be opened this year. The buildings are in collegiate gothic style, of red brick trimmed with limestone, with a minimum of ornament. The college will cooperate with Fisk University in the development of a medical library to be housed in the library at Fisk.

Society News.—Dr. Tom R. Barry, Knoxville, addressed a joint meeting of the Anderson and Campbell county medical societies, July 23, at Clinton, on "Diseases of the Prostate with Special Reference to Vesical Neck Obstruction with Demonstration of a New Method for Its Removal."——The Bedford County Medical Society was addressed, July 16, by Dr. Thomas J. Coble, Shelbyville, on appendicitis.——The Chattanooga and Hamilton County Medical Society was addressed, August 13, by Drs. Stanton S. Marchbanks on "Carcinoma from the X-Ray and Laboratory Standpoint"; James D. L. McPheeters, "Peptic Ulcer," and Jasper A. Reynolds, "Management of Bad Risk Surgical Patients."——Dr. William C. Dixon, Nashville, among others, addressed the Five-County Medical Society (Hardin, Lawrence, Lewis, Perry and Wayne), in Lawrenceburg, June 30, on "Chronic Cholecystitis."——The Haywood, Lauderdale and Tipton Counties Medical Society was addressed at Ripley, July 21, by Drs. Robert Mann and William T. Pride, both of Memphis, on "Peptic Ulcer" and "Management of Occiput Posterior," respectively.——Dr. Beulah M. Kittrell, Knoxville, addressed the Knox County Medical Society, August 4, on "Value of Different Therapeutic Agents in the Treatment of Rickets." Dr. James B. Neil addressed the society, August 11, on gonorrhea in the female.——Dr. Joe B. Wright, Lynnville, addressed a joint meeting of the Lincoln and Giles county medical societies, July 16, on children's diseases, and Dr. Ernest M. Fuqua, Pulaski, on vitamins.——The Robertson County Medical Society was addressed, July 21, by Drs. Oval N. Bryan and Nathaniel S. Shofner, both of Nashville, on "Anemia" and "Indications and Contraindications for Thyroidectomy," respectively.

WASHINGTON

State Medical Election.—Dr. Horace J. Whitacre, Tacoma, was elected president and Dr. Curtis H. Thomson, Seattle, secretary, of the Washington State Medical Association at the annual meeting in Aberdeen, August 3-5. The association will meet in Tacoma in 1932.

WISCONSIN

Society News.—Drs. Francis D. Murphy, Milwaukee, and Richard H. Juers, Marshfield, addressed the Ninth Councilor District Medical Society, Wisconsin Rapids, July 15, on "Diagnosis and Treatment of Cardiovascular Diseases" and "Nephritis in Children," respectively.

Diphtheria Campaign.—The health department of Milwaukee is conducting its second annual diphtheria immunization campaign during August. To facilitate the immunization of children by private physicians, the health department has furnished toxoid and antitoxin gratis. It was hoped that 10,000 children would be immunized in this campaign. Statistics in the health department show that approximately 40 per cent of the 60,000 preschool children and 60 per cent of the 100,000 school children in Milwaukee are immunized. Only about 1,400 children received preventive treatment during the first five months of this year, the department reported. Eight deaths from diphtheria occurred during the first six months.

GENERAL

Four Weeks of Automobile Fatalities.—The U. S. Department of Commerce announced that, during the four weeks ended August 8, eighty-two large cities in the United States reported 673 deaths from automobile accidents. This number (673) compares with 637 deaths during the four weeks ended Aug. 9, 1930. For the fifty-two week periods ended Aug. 8, 1931, and Aug. 9, 1930, the totals for the eighty-two cities were, respectively, 9,116 and 8,894, which indicate a recent rate of 25.6 per hundred thousand of population as against an earlier rate of 25.4.

Mississippi Valley Conference on Tuberculosis.—The joint annual meeting of the Mississippi Valley Conference on Tuberculosis and the Mississippi Valley Sanatorium Association will be held, September 21-23, in St. Paul at the Lowry Hotel. Among the states participating are Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North and South Dakota, Ohio and Wisconsin. The tentative program

includes Drs. Walter S. Broker, Battle Lake, Minn., "Tuberculin Testing by Districts in Minnesota"; Jerome R. Head, Chicago, "Phrenico-Exeresis in the Treatment of Lung Disease"; Alfred W. Gray, Milwaukee, "Increasing Importance of Silicosis"; Max Biesenthal, Chicago, "Spontaneous Pneumothorax"; William A. Hudson, Detroit, "Endoscopy in the Diagnosis and Treatment of Nontuberculous Diseases of the Lungs"; David A. Stewart, Ninette, Canada, "Tuberculosis Treatment Plus the Three R's," and Walter J. Marcley, Fort Snelling, Minn., "Changes in the Last Ten Years Made in the Sanatorium Treatment of Tuberculosis." A roentgen clinic to demonstrate the value of serial roentgen films in determining the progress of tuberculosis will also be a feature of the meeting.

American Public Health Association.—The sixtieth annual meeting of the American Public Health Association will be held in Montreal, Quebec, September 14-17, under the presidency of Dr. Hugh S. Cumming, Washington, D. C. The preliminary program lists symposiums on toxoid immunization, rural sanitation, health facts and health education, mental hygiene and drought. Included among those on the extensive program are Drs. Iago Galdston, New York, "What Constitutes Health Education in the High School?"; Thomas Parran, Jr., "Control of Syphilis from the Epidemiologist's View"; Eugene L. Bishop, Nashville, Tenn., "Syphilis in a Rural Colored Population in Tennessee"; Lewis R. Thompson, Washington, D. C., "Trends and Opportunities in Industrial Hygiene"; Harry E. Kleinschmidt, New York, "New Opportunities in the Use of the Motion Picture"; Joseph Colt Bloodgood, Baltimore, "The Cancer Situation as It Affects the Public Health Laboratory"; Louis I. Dublin, Ph.D., New York, "Incidence of Tuberculosis in the Industrial Population," and Carl R. Fellers, Ph.D., Amherst, Mass., "Public Health Aspects of Frozen Foods." A symposium on British public health administration will be a feature of the meeting, Tuesday afternoon; the speakers will be Sir Allan Powell, chief public assistance officer, London County Council, London; Drs. George F. Buchan, James Fenton, and Charles Porter, medical officers of health in the districts of Willesden, Kingston and Marylebone, London, respectively. A dinner in honor of Dr. Alice Hamilton, assistant professor of industrial medicine, Harvard School of Public Health, Boston, will be held, Tuesday, with Dr. Anthony J. Lanza, New York, presiding. Charles-Edward A. Winslow, D.P.H., New Haven, Conn., will speak on "Alice Hamilton, the Industrial Hygienist," and Dr. Hamilton, "My Years in Industrial Hygiene."

Annual Report of Bellevue-Yorkville Demonstration.—The study of tuberculosis in adolescents and a social hygiene campaign were the two projects of special interest carried on by the Bellevue-Yorkville Demonstration of the Milbank Memorial Fund in 1930, according to the annual report recently released. One thousand school children were examined to determine an effective method of finding those cases of childhood tuberculosis which are generally assumed to be an important source of tuberculosis in later life, to ascertain the kind and amount of tuberculous infection in a cross section of the child population, and to study the factors influencing its prevalence. This project contributed further information regarding the diagnosis and prevalence of the disease in the age group studied in the Bellevue-Yorkville district, and served as a trial of methods which might prove practical in other parts of the city. The purpose of the social hygiene campaign was to familiarize the adult population of the district with the essential facts concerning syphilis and gonorrhea and to induce as many infected persons as possible to seek medical advice and treatment. The campaign was carried on during October, November and December with the demonstration, the department of health, the New York Tuberculosis and Health Association, and the American Social Hygiene Association cooperating. The general death rate in the district was 15.1 per thousand in 1930 as compared with 16.7 in 1929; the birth rate was 13.2 per thousand, as against 14.6 in 1929. There had not been one death from diphtheria since August, 1929. In 1930 there were only seven deaths from puerperal diseases, as compared with eighteen in 1929, the rate being 3.5 per cent live births against 7.9 for the previous year. Venereal diseases formed the largest single group of communicable diseases reported, with a total of 1,597 new cases. In November, 1930, as an experiment, a complete mental hygiene unit was established as part of the demonstration; this service is largely for consultation, but treatment can now be given to a few cases definitely needing psychiatric therapy. The study of vaginitis in children, nursing service for private physicians and laboratory service for physicians were discontinued during 1930. Gross expenditures amounted to $145,700.09. The Bellevue-Yorkville Health Demonstration is financed by the Milbank Memorial Fund for the purpose of trying out approved methods for the prevention of disease and the promotion of health. The district in which its activities are being carried on has a population of about 150,000.

CANADA

Society News.—The Montreal Society of Anesthetists, recently organized, elected Dr. Charles Larocque president; Dr. Wesley Bourne, vice president, and Dr. Harold R. Griffith, secretary.——Dr. Louis E. Phaneuf, Boston, addressed the New Brunswick Medical Society at Campbellton, July 14, on "Causes and Treatment of Uterine Bleeding."——Dr. William J. Bell, Toronto, deputy minister of health for Ontario, was elected president of the Canadian Public Health Association and Dr. John T. Phair, Toronto, secretary, at the recent annual meeting, in Regina, Sask.

License Revoked.—The Council of the College of Physicians and Surgeons of Ontario at its annual session in July revoked the registration in Ontario of Raymond Nauth. It was alleged that his license to practice medicine in Ontario was based on false credentials from the University of Buffalo (N. Y.), which he is said to have attended for only three years. The university reported that Nauth was refused permission to register for his fourth year "because of unwarranted claims based on some alleged research work on cancer and because of widespread and unwarranted publicity given these claims through the newspapers."

Government Services

Pilot Overcome in Air by Carbon Monoxide

An airplane pilot was recently overcome by carbon monoxide gas which, an investigation disclosed, was caused by an unusual break in the exhaust line leading through a heater jacket, allowing exhaust gases to fill the interior of the airplane immediately around the pilot. Two student officers of the aerial photography class of the air corps technical school, Chanute Field, Rantoul, Ill., were engaged in taking photographs at an altitude of 12,000 feet over Chicago. The photographer sensed that the plane had gone into a steep dive, and on going forward he found the pilot unconscious and in such a position on the control stick that the plane was diving at about 170 miles an hour. The pilot was removed from his seat with difficulty by the photographer who then flew the plane to Chanute Field. The photographer had not been affected by the fumes.

Change of Station in the Navy

Lieut. Comdr. George B. Dowling from the U. S. S. *Bushnell* to the naval hospital, Puget Sound, Wash.; Lieut. Albert H. Staderman from the naval hospital, League Island, Philadelphia, to the U. S. Naval Home, Philadelphia; Lieut. William L. Berkley from the navy rifle team, Annapolis, to the Asiatic Station; Lieut. Caldwell J. Stuart, from receiving ship, New York, to Norfolk Naval Hospital, Portsmouth, Va.; Lieut. Comdr. John G. Powell, from U. S. S. *Pittsburgh* to naval hospital, Philadelphia; Lieut. Stuart J. Trowbridge, from naval air station, Pensacola, Fla., to naval hospital, Washington, D. C.; Lieut. Albert Ickstadt, Jr., from naval hospital, Puget Sound, Wash., to naval air station, Seattle; Lieut. Martin V. Brown, from naval hospital, New York, to Asiatic Station; Capt. Samuel S. Rodman, to duty as medical officer in command of U. S. Naval Hospital, Canacao, P. I.; Lieut. Comdr. Albert G. Wenzell, from the naval hospital, Puget Sound, Wash., to the naval station, Tutuila, Samoa; Lieut. Thomas L. Allman, from the naval hospital, New York, to the Asiatic Station; Lieut. Comdr. Harold L. Jensen from the U. S. S. *Altair* to the U. S. Naval Hospital, San Diego; Lieut. David M. Segrest from the naval hospital, Washington, D. C., about August 10, to the U. S. S. *Antares;* Lieut. Ernest Ward from the fleet air base, Pearl Harbor, T. H., to marine barracks, Quantico, Va.; Lieut. Robert C. Boyden from the naval hospital, Washington, D. C., about August 25, to naval training station, Hampton Roads, Va.; Lieut. Calvin B. Galloway from the naval hospital, Portsmouth, Va., about September 1, to Asiatic Station; Lieut. Frank K. Soukup from the Public Health Service of Haiti to the naval hospital, New York; Lieut. Comdr. James B. Moloney from naval hospital, Newport, R. I., to U. S. S. *Concord;* Lieut. Clyde W. Brunson from U. S. S. *Mississippi* to University of Pennsylvania Graduate School of Medicine, Philadelphia; Lieut. Claude D. Roop from Public Health Service of Haiti to naval hospital, Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 1, 1931.

An Extension of the Royal College of Surgeons

The president of the Royal College of Surgeons, Lord Moynihan, pointed out that John Hunter, the founder of its museum, added more to surgery by experiments and observations made at his farm at Earl's Court than by his experience as a surgeon at St. George's Hospital. In his annual report as conservator of the museum, Sir Arthur Keith asks, If experiment proved so fruitful in the hands of surgeons of the eighteenth century, who had only crude methods at their disposal, how much more is to be expected today with the wider knowledge and more precise technic? The need of an "Earl's Court" has been apparent to all who wished the college to take the lead in advancing the knowledge on which the practice of surgery is based. Thanks to the munificence of Mr. Buxton Browne, a retired urologist, a biologic station in the country in connection with the museum has been established. The site is one of 13 acres adjoining Down House, once Charles Darwin's home, which was presented by the same benefactor to the British Association for the Advancement of Science to be used as a memorial and museum of Darwin relics. The foundation stone of the Buxton Browne Surgical Research Farm has been laid by Lord Moynihan. He said that the Royal College of Surgeons was entering on a new career. Hitherto it had fulfilled its statutory duties to the satisfaction of all; henceforward it would assume fresh and wider responsibilities. Since Lister's day the main activities of surgeons had been directed to the recognition of disease in more and more precocious stages, and to the planning of methods of approach and attack on organs formerly inaccessible. Little by little it had become evident that no region of the body could stand aloof from their inquiry. Lister had given the weapon which allowed them to find the path into territory which disease was able to enter. Surgery had thus become not only the strongest therapeutic measure but also a method of research. Many lessons had been learned in that most procreant laboratory, the operation theater, and while this had been going on animal experimentation, the safety of which they also owed to Lister, had been of great benefit to surgery. The Council of the College of Surgeons, which properly regarded itself as the custodian of surgical advance in this country, had now recognized that for the further advance of surgery there must be correlation of various results from methods of inquiry in three directions: (1) clinical research in the wards and operation theaters; (2) pathologic research in hospitals and special institutions; (3) research on animals. Laboratories had been built and old laboratories extended in their college. Now, owing to the great beneficence of a fellow of the college, they were adding the one remaining link for the proper development of surgery in this country.

Mr. George Buxton Browne, the donor, said that they were there to recognize John Hunter as their patron saint. It was interesting that they had been able to bring the genius of John Hunter, who did so much for the alleviation of suffering of the human body, alongside the genius of Charles Darwin, the great emancipator of the human mind.

The Shortage of Physicians for the Army

The shortage of officers for the army medical corps is such that the government has appointed a committee to investigate the reasons. The conditions of service as to pay and prospects are not sufficient to attract candidates in the required number. Active and retired officers say that increased pay and accelerated promotion would be effective. Others would deal drastically with the whole organization. Col. A. R. Henchley, who has had considerable experience in army medical life in war and in peace, holds that great economies could be effected in the administration, personnel and equipment of the medical corps and at the same time it could be made more attractive to young physicians with a taste for more freedom and adventure than private practice offers. He would amalgamate the medical service of the navy, army and air forces. This would be a great saving in equipment, personnel and buildings. He also proposes the formation of large convalescent centers, which would obviate the keeping of convalescents in hospitals. The directorates of hygiene and pathology should be amalgamated, as in peace there is not sufficient work for them. Other proposals are the placing of lieutenant colonels on half pay after four years of service; equalization of foreign service in all ranks; and no officer should be passed over for promotion until he has been personally interviewed by the selection board.

"Nutrition Abstracts and Reviews"

A new periodical entitled *Nutrition Abstracts and Reviews* is to be published under the joint direction of the imperial agricultural bureaus council, the medical research council and the Reid library, Aberdeen. The editors are Dr. J. B. Orr, director of the Rowett Institute of Research and of the Imperial Bureau of Animal Nutrition, Aberdeen; Dr. J. R. Macleod, professor of physiology in the University of Aberdeen, and Dr. Harriet Chick of the Lister Institute, London. With the assistance of corresponding editors in other countries abstracts of all papers which have a bearing on nutrition will be brought together and these will be prepared, as far as possible, by workers engaged in research. There will also be reviews by authorities on the existing knowledge of particular subjects. The periodical will be published quarterly and the first issue is due in October. The subscription is $5 a volume or $1.50 a single number, post free to any part of the world. Communications should be addressed to the secretary, Nutrition Abstracts and Reviews, Imperial Bureau of Animal Nutrition, Reid Library, Rowett Institute, Aberdeen.

No Increase of Insanity

"We can find no justification for the pessimistic suggestions so commonly made that the pace of modern life conduces to mental breakdown." This is the striking conclusion of the board of control, the official authority in this country for lunacy and mental deficiency, in the annual report for 1930. January 1 there were 144,161 notified insane persons under care in England and Wales. The increase for the year is 1,774, considerably less than the average for the past five years, which is 2,056. The percentage of males and females is 44.1 and 55.9, respectively. The increased number of notified insane is held to have no necessary connection with the incidence of mental disease in the general population, being merely the increase shown by the excess of admissions over the combined deaths and discharges. The number of patients in public mental hospitals increased by 2,410, which figure is regarded as normal. With the falling birth rate as the adult proportion of the population grows larger, the number of persons suffering from mental disease will tend to increase. There is a greater readiness to seek institutional treatment for elderly patients who formerly were nursed at home. Owing to better feeding and care, the death rate in mental hospitals has diminished and is now lower than it has ever been. Present-day conditions of urban life may tend to increase the frequency of some minor nervous disorders, but there is no evidence that they are increasing mental disease.

THE MARRIAGE OF DEFECTIVES

The board finds the marriage of defectives one of the most difficult problems of community control. Higher grade defectives show no obvious sign of physical defect. They are neither more nor less attractive than the average of the class to which they belong, and in some cases a certain docility, probably more apparent than real, seems to be regarded as an added charm. Whatever the cause, there is unfortunately no doubt that, in the

absence of an educated public opinion, higher grade defectives are not less likely to be sought in marriage than normal persons. Society cannot segregate defectives who are in other respects fit for community care merely to prevent them from marrying. Ethically or legally it would be difficult to defend such a course. Yet such marriages are almost certain to be socially disastrous. The board again recommends that the marriage of defectives should be prohibited by law and believes that this step would have a value far beyond the actual cases to which it would apply. Whether the state should go further and limit the danger by sterilization is a far more difficult question. The board hopes that this question will receive close scientific study. In the present state of knowledge it does not feel justified in recommending the government to introduce legislation even of the most cautious and limited character, which would inevitably provoke strong opposition from many bodies, on religious or other grounds, for the sake of advantages which may be arguable in theory but which have not been demonstrated in practice.

PARIS

(From Our Regular Correspondent)

July 15, 1931.

Peculiar Cases of Syphilis in Women

Dr. Léon Bizard, chief physician of the venereal hospital at the St. Lazare prison for women, has published an article on peculiar cases of syphilis in women, in which it is impossible to find a trace of the initial chancre. These facts have long been known to syphilologists. Alfred Fournier assumed that there might exist in the infected woman a small chancre of a transitory nature, which passed unnoticed. Jullien and Verchère reached the conclusion that syphilitic infection in woman might be generalized without a primary lesion, possibly by the spermatozoon contaminating the uterine mucosa directly by a sort of impregnation without conception. Dr. Léon Bizard, who has been studying this problem for many years, reached the conclusion that there are many more women who contract syphilis under these conditions than any one imagines. Since he has been subjecting to the Wassermann test all women that pass through his hospital and dispensary, he has been surprised at the frequency with which the test proves frankly positive in women who never have presented any syphilitic lesion. Dr. Bizard reported the case of a woman who presented no lesion and who, after a single sexual contact with a young man previously continent, caused him to have, in three weeks, chancre of the penis. Since that time, he has consistently imposed energetic antisyphilitic treatment on every prostitute whose Wassermann test is positive. Bizard has suggested several possible explanations. He assumes that certain women may have an allergic resistance to syphilis and that, when they become contaminated, they serve as germ carriers. He assumes, in agreement with Levaditi, that the spirochete represents only a visible stage of the evolutional cycle of the infecting organism and that there is an invisible virus stage that causes infection. He supports the ideas of Prost of Freiburg, who has studied buboes in the West Indies. He regards them as an inguinal lymphogranulomatosis, observed solely in men, the virus of which is harbored in a saprophytic state in the vagina of the native women. This has led to the assumption that in our climate there might be in certain women a saprophytism of the syphilitic virus.

Chronic Poisoning from Water in Lead Pipes

Numerous cases of lead intoxication from water derived from the pipes of the city water system have been diagnosed in a western city. Dr. Thouvenet, who made an investigation, reported 150 cases, some of which were grave, and his report, supported by chemical analyses of the water, has induced the municipal council of the city to replace the lead pipes with copper pipes. The poisoning is due to the fact that pure water, in which calcium carbonate is absent, attacks the metal of the pipes and gives rise to lead oxide, which is toxic, while waters with a high calcium carbonate content soon befoul the pipes by forming a deposit of insoluble salts. The water is not dangerous except when the pipes are newly installed; for the more abundant the deposit becomes, the less harmful it is. Dr. Thouvenet said that here is a danger that may affect the health of all the inhabitants of a city when the poisoning takes place in a slow and unobserved manner. Water mains are usually of iron rather than of cement, but the smaller pipes that conduct the water to the homes are commonly of lead, which is less expensive and more easily worked than copper. Copper is harmless, whereas chronic lead poisoning may result in chronic nephritis, arteriosclerosis and arthritis. Possibly hepatic insufficiency, which is becoming so common among the inhabitants of the cities, has therein a cause that is often lost sight of.

Reform of Dental Studies

The Academy of Medicine has completed the discussion that was begun three months ago, following the receipt of an official request from the minister of health for information in regard to a bill submitted to parliament by Rio and Milan, which would provide, if it became a law, for the reorganization of dental studies. The discussions were long and stirring, the academy being divided into equal camps. The main question was the proposed suppression of the duality that exists between stomatologists who obtain a diploma of doctor of medicine and the stomatologists who have no degree in medicine, being equipped only with the diploma of a *chirurgien dentiste*, secured on the completion of dental studies. The diploma of *chirurgien dentiste* is given by the faculties of medicine. Great rivalry has existed for many years between these two classes of stomatologists. Those who are doctors of medicine would like to suppress those who are not doctors, and emphasize that stomatology today is too closely associated with general pathology to be entrusted to operators who are unfamiliar with medical science as a whole. The others reply that if all dentists are to be required to pursue preliminary classical studies and a complete medical course, which cover long periods of time, there will not be a sufficient number of stomatologists for the rural districts and the small towns. The first vote on the question by the academy was a tie. A new vote has been taken and has resulted in the defeat, by a narrow margin, of the Milan-Rio bill. The academy goes on record, therefore, as favoring the maintenance of the two classes of stomatologists. It favors the organization of more extensive courses of study for the dentists who are not physicians. It recommends also making the bachelor's degree a preliminary requirement and extending the course of dental studies proper from four years to five years.

The Social Center of American Students and Chateaubriand's Garden

The members of the Commission du Vieux-Paris, instituted to preserve everything in the capital that has an artistic interest, were disappointed on learning that the Social Center of American Students had acquired a portion of the garden of the villa occupied by Chateaubriand from 1828 to 1837, on which it planned to erect a large building. This villa had been bequeathed to the city of Paris to serve as a home for aged and infirm priests and for society women who have become poor. It comprises a large garden in the northern section of Paris, not far from the University City, many of its trees having been planted by Chateaubriand himself. These trees are to be destroyed in the construction of the proposed building, and the Commission du Vieux-Paris is bemoaning the fact. Unfortunately, the administration of the Assistance publique, which manages the property in the name of Paris, gave the Social Circle of American Students a long-term lease without realizing that the trees would be sacrificed. The deal has been legally consummated, and nothing can be done about it unless

the social center listens to protests. The Commission du Vieux-Paris has passed a unanimous resolution requesting the municipal council to effect an amicable renunciation, and offers the social center another site of the same extent, where the erection of the building will not destroy a spot dear to many citizens of Paris who worship at the shrine of the renowned French author.

The French Congress of Surgery

The eleventh French Congress of Surgery will be held in Paris, Oct. 5-10, 1931, under the presidency of Mr. O. Lambret, professor of clinical surgery at the Faculté de médecine de Lille. The chief topics on the program will be: (1) Postoperative Peptic Ulcers: Pathogenesis and Treatment, to be presented by Mr. Gosset of Paris and Mr. Leriche of Strasbourg; (2) Immediate Surgical Treatment of Open Leg Fractures, by Mr. Roux of Montpellier and Mr. Sénèque of Paris; (3) Peritonitis, with Pneumococcus Infection, by Mr. Bréchot of Paris and Nové-Josserand of Lyons. Members of the association and foreign physicians who have been accepted as guests should send, as soon as possible, the title and the conclusions of their communications to the general secretary, Professor Grégoire, 12, rue de Seine, Paris (VIe).

BERLIN

(From Our Regular Correspondent)

July 13, 1931.

Annual Session of the Gynecologic Society

The annual session of the Deutsche Gesellschaft für Gynäkologie was held in Frankfort-on-Main, May 26-30, under the presidency of L. Seitz of Frankfort.

CONSERVATIVE MANAGEMENT OF CHILDBIRTH

I. H. Stoltheim of Leipzig presented the official paper on the first topic: "Conservative Management of Childbirth." The speaker distinguished between conservative management of childbirth as it affects the child and as it affects the mother; for what may be good for the mother may bring disadvantages for the child, and vice versa. But the principle still holds: first the mother and then the child. The forceps and continuous control of the heart tones of the child have brought great progress. The injuries of the child resulting during childbirth from rigid soft parts may be avoided by deep incisions. Conservative treatment of the child after birth consists in careful attention to the umbilicus, the prevention of ophthalmic gonorrhea, and the institution of prompt treatment in the event that syphilis exists. Under the broad head of conservative confinement for the mother, the speaker included prophylactic hardening of the girl as she approaches womanhood. The selection of the proper time for the first birth, which he places between the ages 18 and 20, is important. Bad conditions for conservative childbirth are created by an advanced age at the time of the first birth and by too much industrial work, the sequels of which are overstretching, lacerations and defective retrogression of the pelvic floor. For a conservative confinement one should have a steady, slow, unforced progression of childbirth once it has begun, especially after rupture of the bag of waters. He disapproves of the Potter method, according to which every birth should be completed under anesthesia by version and extraction. Aseptic birth management by the use of rubber gloves, and substitution of rectal for vaginal examination, reduce the possibility of infection. If a vaginal examination is resorted to, one should not ever go beyond the external os uteri. Loss of robustness as the result of childbirth is a widespread manifestation in women in all parts of the world. The best prophylactic method to prevent this condition is to see to it that women pursue no gainful occupation during the last months of pregnancy and that they do not return to work for three months after childbirth. Of paramount importance for the carrying out of conservative childbirth are a well trained medical profession and well trained midwives. Relief of pain during birth is not accomplished in the form of twilight sleep. Morphine is used during the first onset of the birth pains and anesthesia is employed during the emerging of the head.

STERILIZATION AND PREVENTION OF CONCEPTION

L. Fränkel of Breslau presented the official paper on the second topic: "Sterilization and Prevention of Conception." In his opinion, there is no time during the menstrual cycle when conception might not take place. Temporary sterilization with radium or roentgen rays he disapproves of, as too little is known as yet with regard to the late results. An operative extraperitoneal shifting of the ovaries may possibly be feasible; but the operation is too uncertain in its results to be recommended. Animal experiments show that sterilization by parenteral introduction of living and killed seminal fluid offers chances of success. In animals a reduction of fertility can be secured also by the withdrawal of vitamins B, D and E; but it jeopardizes the health of the animal and is not to be considered with reference to man. The indications for sterilization must be established in writing in each individual case by two physicians. No general indications can be set up. The eugenic indications have not yet been sufficiently clearly worked out. For the sterilization of a weak-minded person, one must secure her consent, the consent of the guardian and that of the court that appointed the guardian, including a consultation with a psychiatrist. The speaker refused to accept purely social indications for sterilization, although he considers that social factors may justify indications that from the medical point of view alone would not suffice. Protective sterilization may possibly be considered, whereas compulsory sterilization and sterilization as a form of punishment must be rejected.

The second part of the paper dealt with the means for the prevention of conception. Chemical substances employed alone are not feasible, as they are not always carried to the os uteri in a manner to prevent the spermatozoa from entering the cervix. In general, the measures employed ante coitum are better than those used post coitum. Intra-uterine pessaries are absolutely rejected, as they are not devoid of danger. The use of harmless but effective contraceptive measures does not affect the libido, nor need later sterility be feared. The recommendation of such contraceptive measures may, under certain circumstances, be punishable by law, but their use is not punishable. The sale of contraceptive agents should be controlled by physician health officers in order to prevent the sale of unsuitable devices. It is desirable that physicians and students receive practical and theoretical instruction in the use of contraceptive measures. The centers for consultations on sexual matters should refer to physicians all persons who seek information on the use of contraceptive measures. The sick benefit associations should supply the necessary funds for the procuring of contraceptive agents and should furnish instruction as to their proper use. The opinion brought out by the general discussion was to the effect that contraceptive measures should be employed by the physician only under definite indications and should be recommended with discretion. From the eugenic point of view, Löffler of Kiel spoke as an anthropologist on sterilization, prevention of conception and eugenics. In his opinion, it would never be brought about, no matter how much publicity was given to the subject, that biologic inferiors and the heedless will make equal or greater use of preventive measures than normal persons who consider the significance of their acts. In all cases in which it is economically possible, and that is oftener than is commonly supposed, all possible influence should be brought to bear to increase the number of children in normal families that are biologically up to standard.

CARE OF MOTHERS

M. Hirsch of Berlin presented the official paper on the "Care of Mothers." Interest in the capacity of women to bear children should begin with infancy and should continue through early

childhood and school age. Welfare work for the benefit of mothers must include general hygienic measures and supervision of juvenile workers, in order that they may be fitted for the duties of a mother. Advice should be given in connection with marriage and the bearing of children. Questions pertaining to the regulation of births and the hygiene of propagation should be discussed. Care of the pregnant comprises the time from conception until birth. In addition to the hygiene of pregnancy in general, welfare work must include industrial hygiene as it pertains to pregnant women who are gainfully employed. Furthermore, it must consider certain social factors, such as early death among the new-born, syphilis and gonorrhea. Naturally, the care of parturients covers domiciliary and institutional obstetrics. Post partum the care of puerperants, the care of nursing mothers and the care of infants take the place of the care of the pregnant. Welfare work for mothers is not directed so much toward the individual as it is toward mothers as a whole, in order to improve the procreative capacity of the people. Gainful employment outside the home and child-bearing do not go together well. Eight weeks ante partum and three months post partum, and in the case of nursing mothers six months post partum, women should be absolutely relieved of extradomiciliary employment. The loss of wages should be covered by increased weekly benefits.

THE PITUITARY BODY

The official paper on the fourth topic, "The Pituitary Body," was presented by Bernhard Zondek and Selmar Aschheim of Berlin, who spoke on the anterior lobe of the hypophysis, and by Guggisberg of Berne, who spoke on the posterior lobe. The anterior lobe of the hypophysis is the motor of the sexual function. It has a stimulative effect on the ovary in the child and can influence other parts of the sexual apparatus only by way of the ovary. The three reactions precipitated by the hormone of the anterior lobe in the ovary are, first, maturation of the follicle, maturation of the ovum, and formation of folliculin; secondly, the appearance of blood spots in the matured follicle cysts, and, thirdly, the formation of corpora lutea. One must distinguish between hormone A of the anterior lobe of the hypophysis, which precipitates the maturation of the ovum, and hormone B of the anterior lobe of the hypophysis, which causes luteinization. In addition, a general growth hormone and a metabolism hormone are postulated. The hypophysis in the male excretes approximately the same amount of hormones as in the female. The hormone A of the anterior lobe of the hypophysis is produced in three times the quantity of the hormone B. The pregnancy test through the demonstration of the hormone of the anterior lobe in the urine yields reliable results, if the fetus is living, in from 98 to 99 per cent of the cases. A negative reaction indicates the death of the fetus. Associated with a vesicular mole there is an increase of the hormone of the anterior hypophysis in the blood. It is probable that in the placenta hormone is formed likewise during pregnancy.

In the posterior lobe of the hypophysis must be distinguished a component that increases the tonus of the uterus and a component that contracts the blood vessels and promotes intestinal peristalsis. In addition, there is a decrease in the water elimination and an increase of the excretion of sodium chloride. The two aforementioned components have recently been isolated one from the other. As compared with ergot and the ergotamine preparations, the preparations derived from the anterior lobe are much to be preferred during the onset of the birth pains and the actual delivery. Routine prophylactic use of these preparations is not indicated; but, in some instances, as in the case of twins, with marked dilatation of the uterus and danger of atony, in hydramnion and the like, prophylactic doses may give good results.

W. Stoeckel of Berlin was chosen president of the society for the ensuing year.

RIO DE JANEIRO

(From Our Regular Correspondent)

July 20, 1931.

Chloride Content of Cerebrospinal Fluid

Drs. E. Vampré and O. Lange, of the Faculty of Medicine of São Paulo, following their work to ascertain the diagnostic and prognostic value of variations of the chloride content of the cerebrospinal fluid, conclude that the normal chloride ratio in the cerebrospinal fluid varies from 7 to 7.4 Gm. per liter of the fluid. An increased chloride content in the cerebrospinal fluid is observed in cases of nephritis in which there exists retention of the chlorides in the blood plasma and in those cases of neurosyphilis in which the meningeal lesions are not extensive and the nervous parenchyma has not as yet suffered irremediable lesions, deeply localized. In patients with neurosyphilis the increased chloride content in the cerebrospinal fluid is an indication of a good prognosis, while the prognosis is bad in patients with a diminished ratio except when the diminution appears in association with meningeal hemorrhage; in those cases the decrease of the chloride content of the cerebrospinal fluid depends almost entirely on the blood effusion. In cases of acute meningitis, the more diffuse the inflammatory process is, the more diminished the chloride content of the cerebrospinal fluid. A very low chloride content of the cerebrospinal fluid under 6 Gm. per liter, though it is not a pathognomonic symptom of tuberculous meningitis, should call the attention of the physician to the probability of that disease.

A Variety of Plasmodium Vivax

Dr. G. Souza Pinto presented before the Sociedade de Medicina e Chirurgia of Rio de Janeiro his observations on a form of plasmodium found in Minas, Brazil, which does not correspond with the classic description given for *Plasmodium vivax*. The blood cells parasited with adult forms are increased in size and they present Schüffner granules. Adult forms of the parasite are small, shrunk and round, giving the impression of "cysts." After having reached complete maturation and during the final phase of segmentation, these forms fill only one third or one fourth of the volume of the entire erythrocyte. This form of plasmodium is highly resistant to treatment. Geographically the parasite does not seem to spread over a large area of the country. The disease affects few families living in the neighborhood. Ten cases were observed by the author. Microscopic slides were prepared with the parasite which may be lent to those interested in the topic. During the lecture, illustrations of the preparations were shown to the audience.

Chronic Pericarditis

Dr. Hélion Póvoa has made a statistical postmortem study of pericarditis in the Instituto de Neurobiologia da Assistencia a Psychopathas. He concludes that of the several types of pericarditis the chronic, fibroplastic suppurative type is most frequent. It includes certain forms of epicarditis with either multiple or isolated plaques and some forms of pericarditis with adhesions anteriorly or posteriorly. Next in order of frequency is pericarditis with effusion. The predominant etiologic factors of pericarditis with effusion are tuberculosis and pyogenic infections. Two cases of cysticercus were observed. The only pathologic manifestation in these cases was a marked chronic fibrosis of the total visceral pericardium and of its parietal layers, which were adherent to the former. Among hundreds of necropsies made in cases of suppurative pericarditis, in two cases the author made an unusual observation: the pericardium in those cases bulged outward. In one of the two cases the lesion caused the pericardium to appear as an open flower. In the other case the anterior part of the heart had the appearance of two large and two small flowers. In both cases the diagnosis was fibroplastic pericarditis. There were traces of inflammation characterized by the presence of

exudate of a lymphomononuclear nature and also active fibrosis. Over the layers which formed the petals of the flower it was possible to recover the remains of fibrin undergoing organization. This form of chronic pericarditis is a curiosity. It deserves mention on account of being rare.

BELGIUM

(From Our Regular Correspondent)

July 20, 1931.

Regulations for the Preparation and Sale of Ice Cream

A circular letter has been issued by the public health service calling attention to well known facts connected with alimentary intoxication due to the ingestion of ice cream, more particularly in infants. It gives the essential features of the regulation of the sale of ice cream in foreign countries and in Belgium. The board of health has drafted a regulation that prohibits the use of the following substances in the manufacture of ice cream or ice cream products: (1) all substances, other than flavoring extracts, that have not been boiled for at least twenty minutes; (2) harmful substances whether damaged or prohibited by regulations in force; antiseptics; artificial coloring matter, when the name given to the product indicates or suggests that it contains eggs, cocoa or chocolate, and (3) eggs preserved in the form of paste or powder. Special recommendations concerning the conditions of cleanliness for the manufacture, handling and delivery of the product have been promulgated. Furthermore, persons engaged in the manufacture, handling and dispensing of the product must be free from contagious diseases, must wear clean clothing and must observe bodily cleanliness, particularly as to their hands and nails. In case an infectious disease occurs in a building or an establishment in which ice cream or products containing ice cream are manufactured or prepared, stored or offered for sale, a report must be rendered at once to the public health service or to the police department by the manufacturer or vender of the product.

Law Pertaining to the Protection of Society Against Abnormal Persons

Addressing the Société de médecine mentale, Mr. Vervaeck discussed recently the law pertaining to the protection of society against abnormal subjects. The law as drafted consisted of three parts: the first concerning abnormal subjects in general, the second concerning recidivists, and the third pertaining to delinquent children. Only parts one and two were adopted by the legislature. Part three, concerning delinquent children, gave rise to much controversy because the draft provided for indeterminate sentences and the application of a system of educative instruction. The timid among the legislators feared lest the application of a penalty of indeterminate duration should lead to abuses, and the minister of justice preferred to withdraw the third part of the drafted law in order not to compromise the vote on the draft as a whole.

LEGISLATION PERTAINING TO ABNORMAL SUBJECTS

Abnormal subjects are classified as demented, mentally weak and unbalanced. The definition of abnormality must be fixed by law. By dementia is meant a mental disease in process of evolution, irrespective of its nature, its duration and its termination. No question arises as to the degree of responsibility of a person of this class. He is not responsible.

As for the state of mental weakness, it must be grave in the mind of the legislator; for he took care to add that the mental weakling must be unable to judge of the gravity of his acts. Examination of mental cases presupposes the possible commital to the psychiatric annex of the prison; but only persons whose arrest has been ordered can be sent to the annex. This decision is surrounded by numerous safeguards. In a case of emergency, what is to be done with a dangerous delinquent? The duration of placement in an annex of a prison is one month, renewable five times. If the examination results in a diagnosis of dementia, grave mental weakness, or the like, the prisoner returns to jail until his departure for a psychopathic hospital. The passing of an opinion by the medicolegal expert does not imply internment; it is the court that makes the commitment. It must be shown that the prisoner is a social menace, and material proof must be furnished that he is guilty of the misdemeanor with which he is charged. In the eyes of the law, it is the mental state of the prisoner at the time the judgment is passed that counts. Nevertheless, epileptics and alcohol addicts subject to renewed attacks may present a normal appearance at the time judgment is passed and will constitute a social menace if they are given their liberty. Or just the opposite may happen; a person predisposed to psychoses may commit a criminal act when he is in a normal state and may become ill, while in jail, as a result of his detention. If he appears to the court to be ill, he is liable to be acquitted. Hence, it will be wise always to wait for a definite psychiatric decision.

It should be noted that a person who has been freed from charges cannot be sent back conditionally to a psychopathic hospital, as one might logically desire. That is all the more strange since, if the person discharged does not submit to the conditions that are imposed on him in view of his liberation, he can be sent to a penitentiary colony. Such a committal may lead to prolonged internment if the social menace still exists on the expiration of the term fixed by the judgment.

Establishments for the protection of society will be created by the government.

The law provides furthermore for the creation of a special commission attached to the psychiatric annexes and composed of three persons: a magistrate or chairman appointed by the president of the court of appeal having jurisdiction; an advocate chosen from a double list of three names each prepared by the president of the corporation of barristers, and finally the medical director of the annex. This commission decides on the placement; it rules on the liberation of abnormal subjects and determines the conditions.

The surveillance of abnormal subjects placed at liberty is entrusted to the dispensaries of mental hygiene.

As to the application of the law to persons found guilty of a misdemeanor, those recognized as being grossly abnormal may be placed in psychopathic hospitals.

This law may be regarded as the result of a compromise between the old conceptions and the conceptions based chiefly on social responsibility. In order not to offend any one, it was necessary to proceed by degrees.

The law is especially good from the standpoint that it facilitates the work of moral regeneration among the abnormal, which is an essential condition of their being eventually returned to society. Belgium thus points the way for penitentiary reforms. This law will awaken great psychiatric and medicolegal interest not only in Belgium but also in foreign countries.

Centers of Preventive and Eugenic Medicine

By a pleasing initiative, which cannot fail to have the best results, from the standpoint of hygiene and public health, the Société belge de médecine préventive et d'eugénique has decided to establish, within the next few months, a series of examination centers where all applicants for consultations will receive, on the occasion of a medical visit, an individual record book containing a detailed statement in regard to their physiologic and pathologic condition. Before the end of the year, it is hoped that fifty consultation centers may be established in the principal parts of the country. The first of these establishments has been opened at Ghent. During a luncheon that preceded the inauguration, Dr. Keffer announced in a few words the preventive and altruistic program that the society was planning to carry through. Dr. Imianitoff stated that the supporters of the movement included some of the most eminent

and representative persons in the country. He announced that, in a short time, ambulant centers whose task it would be to detect disease in the homes and to supply all needed information would be opened. The special type of cars to be used by these ambulant centers will contain a consultation office provided with a powerful x-ray apparatus and will cost about $10,000 each. Each province will have one of these cars, which will be the first of the kind to be used in Europe.

ITALY

(From Our Regular Correspondent)

June 30, 1931.

Congress of Thalassotherapy

Under the presidency of Professor Ceresole, the fourth Congress of Thalassotherapy was held recently in Trieste. Dr. Gioseffi of Parenzo presented an official paper on "Methods of Research on the Immediate and the Remote Results of Seaside Treatment." He pointed out that an important problem consists in the devising of precise and objective methods by which to measure the changes that seaside treatments induce in the organism. It is well known that there is no specific action of seaside climate or of thalassotherapy in general on various diseases. The action is based essentially on the fact that the whole organism is subjected to the influence of an aspecific stimulative therapy represented by various climatic factors: air, sun, sea, wind, and the like. For the thalassotherapeutist it is sufficient to detect in the organism of his patient a state of aseptic lability, which permits him to evaluate possibly the activity of a morbid process and to establish the indications or the contraindications to a sojourn at the seaside. Among the aspecific methods of research there are (1) control of the skin reactions; (2) control of the vegetative nervous system; (3) control of the anthropometric measurements; (4) control of the indexes of constitution and of functioning; (5) psychologic methods. Asthenic and anemic patients are benefited by a climate, a resort and a season in which, as a result of cutaneous stimuli (the wind), an increase of basal metabolism is brought about. Persons suffering from irritability are aided by a resort and a season (no wind) in which the catabolic processes may decline to fasting values. If the consumption of oxygen during the experiment is known, one can easily discover the influence that the various climatic factors exert on the metabolism and evaluate their importance in the treatment.

Dr. Gandolfo of Pescara reported on the experiments that he had carried out over a period of two years on persons admitted to the seaside colony of Pescara. The colony has a typical hot, moist seaside climate, which has a sedative effect in the summer months. He criticized the methods that he employed in his experiments and the results obtained, and called attention to the examination of the leukocyte formula as a good method, along with other means, of establishing in adults the length of treatment required and of controlling the beneficial effects.

Professor Baglioni, physiologist at the University of Rome, discussed the importance of the methods and the results hitherto obtained in the scientific investigation of the effects of thalassotherapy. The action of the seaside climate extends not only to the organs and tissues, such as the respiratory organs and the cutaneous tissues, with which it comes in immediate contact, but also to all the other elements of the human economy. In examining such factors, the speaker emphasized those that concern the functions of the cutaneous complex: the respiratory, the secretive, the nervous, the psychic and the metabolic functions. Following the presentation of Baglioni's paper, a discussion developed in which, among others, Magni, Luisada and Piccinini participated. Replying to the questioners, Professor Baglioni suggested that the convention pass a resolution requesting the adoption of a more simple schedule of methods for the control of thalassotherapeutic treatment, and also clearer indications with regard to the duration of such treatment.

Professor Luisada of Viareggio called attention to the importance of studying the physical agents characteristic of the various seaside resorts, in order that the changes found in the various organic functions after seaside treatment may be attributed to one or the other special physical condition obtaining in the locality concerned. In the thalassotherapeutic center at Viareggio, many different types of apparatus have been procured for the purpose of obtaining various physical and meteorological records; for the measurement of the electro-atmospheric potential, the solar radiations, the radiations from the sea water, the solar temperature, and the like, while, from the clinical side, systematic researches are carried out on the behavior of the blood and other bodily activities.

Professor Ceresole of Venice explained a solar filter screen invented by Dr. Camporesi of Forli, which allows the passage of ultraviolet rays but screens out nearly all the infra-red rays.

Alberti of Rome spoke on the indications and contraindications of thalassotherapy in diabetes. There are absolute contraindications, such as the tendency toward the formation of acetone bodies, and tuberculous complications. Florid diabetic patients of middle age are often aided by seaside treatment but preferably not in association with high temperatures, which are not well borne by diabetic patients, and then, too, it is not advisable for them to expose themselves every day in order to get to the seashore. The diabetic patient that can profit from seaside treatment is the arthritic type. The bath, however, and the exposure to the sun should be short. If the diabetic patient is obese and loses weight at the seashore, that will be an advantage, and often the glycosuria will disappear as a result. With regard to the complications of diabetes, the speaker, contrary to the prevailing current opinion, advises against sunbaths on the beach as a remedy in sciatica and neuralgia. The diabetic patient at the seaside should protect the feet well by firm socks to prevent lesions of the skin, which in these patients are often dangerous.

Ceremonies in Honor of G. B. Morgagni

Forli, the native city of G. B. Morgagni, organized recently special ceremonies in his memory. Morgagni was the most eminent anatomist of the eighteenth century and the founder of pathologic anatomy. Representatives of several foreign universities—Cairo, Berlin, Düsseldorf, Heidelberg and Paris—participated in the ceremonies. Senator Messedaglia drew a picture of the life of Morgagni as an anatomist and pathologist, physiologist, poet and humanist. On this occasion, the monument to Morgagni that had stood in the Cortile del palazzo degli studi was transported to Morgagni Square.

Marriages

FELTZ CLEVELAND DAVIS, Macon, Ga., to Miss Loraine Eleanor Homans of Englewood, N. J., July 11.

WALTER BREM MAYER, Charlotte, N. C., to Miss Helen Anne Dainis of Mahoney City, Pa., July 14.

JOHN ALEXANDER CLINTON GRAY, New York, to Miss Janet Helen Fiske in Rutland, Vt., July 11.

WAYNE G. PIPPENGER, North Liberty, Ind., to Miss Gladys A. Wise of Lafayette, July 9.

BENJAMIN F. GATES, Cleveland, Tenn., to Mrs. Bonnie Sue Edmonds of Soddy, July 9.

SHERMAN T. STENBERG, Hudson, Wis., to Miss Evelyn G. Mork of Madison, July 8.

CARLTON A. FLEMING, Tifton, Ga., to Miss Virginia Hollingsworth, July 12.

WILLIAM EVANS, JR., Bennettsville, S. C., to Miss Norma Brabham, July 7.

DANIEL G. BERNOSKE to Miss Helen Evand, both of Indianapolis, July 6.

Deaths

Aristides Agramonte, for thirty years professor of bacteriology and experimental pathology at the University of Havana Faculty of Medicine and Pharmacy, died in New Orleans, August 18, of heart disease and bronchitis, aged 63. Dr. Agramonte was born in Cuba in 1868. His family emigrated to New York, where he attended the public schools and graduated from New York University in 1886, and from the College of Physicians and Surgeons of Columbia University in 1892. He entered the medical corps of the U. S. Army in 1898, and, in 1900, along with Walter Reed, James Carroll and Jesse Lazear, was appointed a member of the U. S. Army board which was sent to Cuba to conduct a clinical and experimental investigation of the cause of yellow fever, which board eventually proved for the first time that yellow fever was transmitted to man by the bite of the mosquito *Stegomyia fasciata*. Dr. Agramonte's chief part in this investigation was to perform the necropsies and the gross pathologic work, and for this the United States Congress, in 1929, granted him a Congressional Medal and a pension. Following the work of the commission and on the establishment of the Republic of Cuba, he remained in Havana, where he was a member of the Yellow Fever Board of Havana, for many years a member of the National Board of Health and, from 1902 to 1909, secretary of the Board of Infectious Diseases of Havana and later chairman. He was president of the Cuban National Medical Congress in 1917 and of the Havana Clinical Society, 1915-1917, and a member of other scientific societies. At a recent meeting of the Pan-American Medical Association, he was appointed chairman of the fourth congress which will meet in New Orleans in 1932. He was the author of many scientific papers on tropical diseases. Recently Dr. Agramonte was called to New Orleans to organize a department of tropical diseases in the new medical school of Louisiana State University.

John Dill Robertson ✠ Chicago; Bennett Medical College, 1896; head of the department of surgery and president of his alma mater from 1905 to 1915, when Loyola University assumed control of the school; health commissioner of Chicago, 1915-1922; president, Chicago Board of Education, 1923; president West Park Board, 1924-1930; member of the Illinois State Medical Society and the American Public Health Association; aged 60; died, August 20, in Fontana, Wis., of angina pectoris.

Herman Ferdinand Lampe ✠ New York; Jefferson Medical College of Philadelphia, 1915; member of the American Laryngological, Rhinological and Otological Society; on the staffs of the New York Eye and Ear Infirmary, Manhattan Eye, Ear and Throat Hospital and the Midtown Hospital; aged 40; died, July 21.

Louis Albert Fritsche, New Ulm, Minn.; University of Michigan Medical School, Ann Arbor, 1887; University of Berlin, Germany, 1890; member of the Minnesota State Medical Association; for ten years mayor of New Ulm; aged 69; died, June 18, of cerebral hemorrhage.

William Carl Heintz, Columbus, Ohio; Ohio Medical University, Columbus, 1900; member of the Ohio State Medical Association; formerly member of the city council and county coroner; on the staff of the Mercy Hospital; aged 56; died suddenly, June 30, of heart disease.

George Inglis MacLeod, Jr., Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1894; veteran of the Spanish-American War; aged 60; on the staffs of the Pennsylvania Hospital and the Bryn Mawr Hospital, where he died, July 16, of pneumonia.

William Andrews Lucas, Knoxville, Tenn.; University College of Medicine, Richmond, 1901; member of the Tennessee State Medical Association and the Medical Society of Virginia; served during the World War; aged 54; died, June 20, of acute dilatation of the heart.

Ray Woodville Greene ✠ Worcester, Mass.; Harvard University Medical School, Boston, 1886; for many years on the staffs of the Worcester City Hospital and the Memorial Hospital; aged 73; died, July 6, of chronic myocarditis, coronary sclerosis and angina pectoris.

Archibald Wright Robertson ✠ Litchfield, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1909; member of the American College of Surgeons; on the staff of the Litchfield Hospital; aged 50; died, July 11, of coronary thrombosis.

Henry Timrod Goodwin ✠ Staten Island, N. Y.; Long Island College Hospital, Brooklyn, 1886; member of the American College of Surgeons; on the staff of St. Vincent's Hospital; aged 72; died, July 13, of coronary embolism and coronary sclerosis.

Jose Antonio Loyola y Castellar, Penuelas, P. R.; Chicago College of Medicine and Surgery, 1914; member of the Medical Association of Porto Rico; served during the World War; aged 41; died, March 9, of carcinoma of the pancreas.

Harvey Edward McCarthy, Kansas City, Mo.; St. Louis University School of Medicine, 1913; member of the Kansas Medical Association; served during the World War; aged 42; died, May 1, of acute myocarditis and chronic focal infection.

Francis Versie McRee, Brookhaven, Miss.; Medical Department of the Tulane University of Louisiana, New Orleans, 1894; member of the Mississippi State Medical Association; aged 59; died, July 17, of carcinoma.

James Andrew Averdick, Covington, Ky.; Medical College of Ohio, Cincinnati, 1874; member of the Kentucky State Medical Association; formerly member of the state legislature and school board; aged 78; died, in August.

Frederick R. Pickett, Olcott, N. Y.; University of Buffalo School of Medicine, 1895; member of the Medical Society of the State of New York; served during the World War; aged 63; died, July 3, of cerebral hemorrhage.

Joseph Witham Young ✠ Toledo, Ohio; Columbia University College of Physicians and Surgeons, New York, 1903; on the staff of the Robinwood Hospital; aged 54; died, July 14, of a self-inflicted bullet wound.

Roscoe Frederick Mauser, Ashland, Pa.; Jefferson Medical College of Philadelphia, 1912; member of the Medical Society of the State of Pennsylvania; aged 43; died, July 3, in a hospital at Washington, D. C.

Charles James Clark, Chauncey, Ga.; University of Georgia Medical Department, Augusta, 1889; aged 74; died, June 16, at the home of his son in Augusta, of arteriosclerosis and acute dilatation of the heart.

Frank Webster Cottom, Shelby, Mont.; Jefferson Medical College of Philadelphia, 1904; member of the Medical Association of Montana; veteran of the Spanish-American and World wars; aged 51; died, June 25.

Adam J. Zielinski, Goose Creek, Texas; Wisconsin College of Physicians and Surgeons, Milwaukee, 1897; formerly health officer of Schulenburg; aged 66; died, March 28, in Pelly, of cerebral hemorrhage.

Francis J. Clemenger, New York; Denver College of Medicine, 1902; adjunct professor of rhinolaryngology, New York Polyclinic Medical School and Hospital; aged 54; died, June 24, of diabetes mellitus.

Patrick G. Mulloy, Morrisburg, Ont., Canada; McGill University Faculty of Medicine, 1912; formerly coroner and medical health officer; aged 45; died, April 26, in St. Vincent de Paul Hospital, Brockville.

William David Gurden, Topeka, Kan.; Meharry Medical College, Nashville, Tenn., 1927; member of the Kansas Medical Society; aged 37; died, May 30, in the Christ Hospital, of tuberculous peritonitis.

John Warren Rice, New Brunswick, N. J.; Medical Department of Columbia College, New York, 1875; formerly on the staff of St. Peter's Hospital; aged 79; died, July 11, of carcinoma of the prostate.

William B. Helm, White Pine, Tenn.; University of Louisville (Ky.) School of Medicine, 1888; formerly member of the state legislature; aged 73; died, July 7, of mitral insufficiency and angina pectoris.

James Bunyan Eure, Poplar Bluff, Mo.; Barnes Medical College, St. Louis, 1897; member of the Missouri State Medical Association; served during the World War; aged 66; died, June 12, of uremia.

Luther Lee Greer, McComb, Miss.; Mississippi Medical College, Meridian, 1907; member of the Mississippi State Medical Association; aged 50; died, July 11, following an operation for appendicitis.

James Edward Campbell, Peoria, Ill.; Northwestern University Medical School, Chicago, 1908; member of the Illinois State Medical Society; aged 59; died recently, in Minneapolis, of pneumonia.

Conrad Nicholas Suttner ✠ Alhambra, Calif.; Kentucky School of Medicine, Louisville, 1896; member of the Washington State Medical Association; aged 63; died, July 13, at his home in San Marino.

Clarence M. McLaughlin, Cleveland; Starling Medical College, Columbus, 1886; aged 66; on the staff of the Cleveland State Hospital, where he died, July 15, of carcinoma of the prostate.

Erskine Grier Donald, Pine Apple, Ala.; Medical College of Alabama, Mobile, 1893; member of the Medical Association of the State of Alabama; aged 57; died, July 1, of cerebral hemorrhage.

Charles Rousseau Fancher ✠ Oakland, Calif.; Washington University School of Medicine, St. Louis, 1920; aged 36; died, June 25, in the Merritt Hospital, of lethargic encephalitis and pneumonia.

Henry Elmore Russegue, Rochester, N. Y.; Boston University School of Medicine, 1878; aged 80; died, May 20, of chronic valvular heart disease, arteriosclerosis and acute gastroenteritis.

Winfield Scott Gilmore, Owensboro, Ky.; Medical College of Evansville, Ind., 1879; Bellevue Hospital Medical College, New York, 1885; aged 83; was found dead, July 10, of heart disease.

Casimir Courtland Fissette, Brantford, Ont., Canada; University of Toronto Faculty of Medicine, 1898; for many years coroner of Brantford; aged 56; died, April 19, of heart disease.

William Eri Jewett, Detroit; University of Michigan Medical School, Ann Arbor, 1930; aged 27; intern, Harper Hospital, where he died, June 27, of pneumonia and empyema.

James William Graham, Belfast Mills, Va.; Tennessee Medical College, Knoxville, 1897; aged 58; died, July 16, of gunshot wounds received during an altercation with a youth.

William Gilman Reed, Southbridge, Mass.; Medical School of Maine, Portland, 1878; member of the Massachusetts Medical Society; aged 83; died, June 25, of angina pectoris.

William Marion Wright, St. Louis; Meharry Medical College, Nashville, Tenn., 1915; aged 43; was drowned, July 4, while swimming in the South River near Palmyra, Mo.

William H. Rogers ✠ Tulsa, Okla.; Kansas Medical College, Topeka, 1894; past president of the Tulsa County Medical Society; aged 59; died, June 30, of heart disease.

Louis A. Koch ✠ Newark, N. J.; Baltimore Medical College, 1902; on the staff of the Newark City Hospital; aged 52; died, July 7, of carcinoma of the sigmoid.

Frederick Gilmore Canney, San Francisco; New York Homeopathic Medical College and Hospital, 1893; aged 62; was drowned, June 18, while swimming.

Harry Hoard Grace, Atlantic City, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1896; aged 65; died suddenly, July 11, of heart disease.

William Preston Hill, St. Louis; University of Pennsylvania School of Medicine, Philadelphia, 1885; aged 73; died, June 24, of sarcoma of the rectum.

Charles Milo Wilson, Owendale, Mich.; Bellevue Hospital Medical College, New York, 1875; aged 79; died, June 14, in Detroit, of chronic nephritis.

William T. Riley ✠ Baltimore; College of Physicians and Surgeons, Baltimore, 1890; for thirty years coroner; aged 60; died, July 7, of heart disease.

Charles E. Gibson, Beaver, Pa.; College of Physicians and Surgeons, Baltimore, 1892; aged 63; died, July 14, of abscess of the left lung.

Robert L. McMurran, Portsmouth, Va.; Jefferson Medical College of Philadelphia, 1890; aged 65; died suddenly, June 23, of angina pectoris.

Paul S. Robinson ✠ New Haven, Conn.; Yale University School of Medicine, New Haven, 1891; aged 63; died, July 10, of heart disease.

William Cochran Hall ✠ Coffeyville, Kan.; College of Physicians and Surgeons, Baltimore, 1885; aged 70; died, July 4, of pneumonia.

Lawson Arnold Crawford, Alliance, Ohio; Baltimore Medical College, 1892; aged 62; died, in July, of cerebral hemorrhage.

Frances M. Way, Detroit; Detroit Homeopathic College, 1902; aged 71; died, July 16, in Oxford, Ohio, of cerebral hemorrhage.

H. C. Williams, Lincoln, Neb.; Bellevue Hospital Medical College, New York, 1886; aged 71; died, June 29, of cerebral hemorrhage.

Calvin Newton Gabriel ✠ Baltimore; Baltimore Medical College, 1897; aged 65; died, June 14, in Mercersburg, Pa., of pneumonia.

William Clyde Ellis ✠ Phoenix, Ariz.; Medical College of Ohio, Cincinnati, 1899; aged 56; died, July 1, of carcinoma.

Henry Charles Kerber, Chicago; Rush Medical College, Chicago, 1877; aged 74; died, July 19, of myocarditis.

Correspondence

COMPENSATION FOR SILICOSIS

To the Editor:—The communication of Dr. Donald Lowe in THE JOURNAL, July 25 (p. 267), on silicosis and workmen's compensation, and the comprehensive reply, embody a matter of great importance. In Ohio, each compensable occupational disease, of which there are twenty-one listed, is separately scheduled and the exact nature of the occupational exposure is definitely defined. I am at loss to see why Dr. Lowe contends that silicosis should be still further "separated" in order to be admitted as a compensable disease for the reason that there may be difficulty of diagnosis or that the Ontario law, which has compensated the disease for years, particularizes it, so as to be acceptable under the various laws of our states. I agree with the specialist's point of view that there should be no more difficulty in diagnosing this affliction and fixing it as an occupational disease than is the case for other afflictions, for instance, lead poisoning, nor can I see why a "wide open law," i. e., one permitting compensation for all characteristic occupational diseases, should prove a menace to physicians in private practice. The files of the Ohio State Health Department and of the industrial commission contain numerous letters from private practitioners in the state demanding to know why their patients who are suffering from silicosis cannot be compensated and physicians' bills for medical services requited as in the case of other occupational diseases. In short, neither the suffering workmen nor the attending physicians are getting a square deal in the matter. Moreover, all employers of three or more persons are taxed to support an occupational disease compensation fund, so that there are likewise inquiries from employers in the files asking why their employees when afflicted with silicosis cannot be compensated.

Controversy results when the employer disagrees with a claim for an occupational disease. Here it is incumbent on the industrial commission to ferret out the facts and not, as Dr. Lowe states, incumbent on the employer to disprove the case. The employer simply presents his facts to be weighed along with those of the claimant, the industrial commission finally deciding the issue.

The financial magnitude of compensating all occupational diseases is insignificant. I refer to the experiences of California and Wisconsin. In the latter state, Chairman Fred M. Wilcox of the industrial commission has reported that no extra premium over that already collected for accidents is found necessary to cover all occupational diseases in their "wide open law."

The United States, with the exception of five states where silicosis may be compensated, viz., California, North Dakota, Wisconsin, Massachusetts and Connecticut, is the only English-speaking country today where this affliction is not compensated. The basic theory for this is that the state could and should prevent occupational diseases and therefore is responsible to the injured party for failure to do so. So important is the matter that a world's conference was held on silicosis in Johannesburg, South Africa, in August, 1930, concerning which the International Labour Office has recently published a large octavo volume of 692 pages. I have read this in vain for any stand against compensation. Instead, the practice is to provide for compensation on an integrated basis for the disease by its various stages and long before actual disability results. In contrast to this, under the present laws of our various states, compensation for either accidental injuries or occupational diseases is invariably forthcoming only after actual disability results.

Dr. Lowe admits that his own industrial experience has provided little opportunity to observe cases of silicosis. I am sure that most of those who have had such an opportunity would not agree with him that the affliction can be separated only with difficulty from "most of the diseases of the heart and lungs."

The aid of the x-rays has greatly facilitated the case and there is the further safeguard that industrial exposure to the breathing of harmful siliceous dust must be proved.

In a number of states, action is now pending under the common law for damages against employers for this disease and recently an important case was won by an employee before a federal court in New Jersey on which hung more than 100 alleged cases including 20 deaths—enough damages to put a powerful industrial corporation out of business or to endanger seriously the insurance companies carrying the risks, as has already happened in the case of radium poisoning. In a number of states, including Ohio, however, such action by common law cannot be taken by the injured worker, so that his plight becomes hopeless. It is also noteworthy that, while the representatives of some of the insurance companies are fighting the extension of the occupational disease schedules or condoning the addition of only the rarest afflictions, others of them are contending that compensation for all occupational diseases is a most weighty answer to the prevention of state medicine. Which is right? Is not a practicing physician who has an indigent case due to silicosis consequent on a faulty condition of work environment entitled to his medical fees from the source that is responsible? How long is "difficulty of diagnosis" to be held a bar to the breathless and cyanosed worker who has silicosis? There are many autopsy records in this country fully substantiating a diagnosis of silicosis made long prior to death. I am convinced that the most economical procedure all around is the full compensation of all characteristic occupational diseases with the attending physician's diagnosis respected as the first step.

EMERY R. HAYHURST, M.D., Columbus, Ohio.

"RECENT FACTS ON TRANSMISSION OF TUBERCULOSIS"

To the Editor:—May I make a few remarks concerning the paper by Dr. J. Arthur Myers on "Recent Facts of Transmission of Tuberculosis" in THE JOURNAL, August 1. I am urged to comment because the views expressed in Dr. Myers' paper may be accepted by the public and thus make it more difficult to recruit nursing staffs for tuberculosis hospitals. This difficulty was very acute about twenty years ago, when many similar papers were published.

Dr. Myers found that "students of nursing and medicine who gave only negative reactions until they were compelled, with inadequate protection, to care for tuberculous patients" became "highly allergic to tuberculin." Four of these developed pleurisy or other forms of tuberculous disease. He urges that "studies should be initiated in all schools of medicine and nursing at once, with a view to stopping the onslaught of the disease among young members of our profession." He does not tell us what was the total number of students of medicine and nursing among whom these four cases of pleurisy developed. Was the incidence greater than among students of other faculties? Was the incidence of tuberculosis equally high in other years? Over a five year period is the incidence of tuberculosis higher in medical students and nurses than in other students? It is to be expected that a certain proportion of persons between 18 and 25 years of age will develop tuberculosis, particularly students from rural communities who come to a large city to study.

Investigations in various parts of the world have shown that the personnel of tuberculosis hospitals and sanatoriums is no more liable to suffer from tuberculosis than people of the same age and social condition engaged in other vocations. In the middle of the last century an analysis of the morbidity of the personnel of the Brompton Hospital in London was cited widely as evidence that tuberculosis is not a transmissible disease; even before 1882, when no precautions had been taken to prevent infection, tuberculous disease was rare among the physicians, nurses and orderlies in that institution. Indeed, an investigation by Saugman twenty-five years ago showed that laryngologists in sanatoriums, who are apt to be coughed at with a spray containing virulent bacilli, are no more subject to tuberculous disease than persons engaged in other callings. Saugman concluded that it is not dangerous for an adult to be coughed at by a consumptive. The literature on this question is vast and by far the greater number of papers show that the danger of tuberculous infection for hospital workers is no greater than in other occupations. At the Montefiore Hospital, the incidence of tuberculosis among our employees is less than that of the same age groups in the general population. I know of no evidence that the incidence of tuberculosis in medical students is higher than that of other young men and women. As consulting physician to a theological seminary, I have seen during the past three years three cases of pleurisy and two cases of active pulmonary tuberculosis among the 200 students in that institution. Would I be justified in appealing "with a view to stopping the onslaught of the disease among the young members" of the clerical profession?

The fear of infection makes it difficult to interest women in nursing the tuberculous. Dr. Myers' paper, which was read before two societies with a large proportion of lay members, is apt to increase the difficulty of obtaining competent nurses for tuberculosis institutions.

MAURICE FISHBERG, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

POSSIBLE DERMATITIS FROM RESIN OR BEESWAX

To the Editor:—A substance known as Kotite or Mammutt (chemical analysis: resin, 57.43 per cent; beeswax, 18.79 per cent; paraffin, 23.78 per cent; moisture, none) has been used for many years to coat the inside of beer barrels to prevent deterioration. It is put on hot and again heated by a blow torch. A man working inside a large cask developed a red skin rash over the entire body, worse on the hands and feet, a temperature of 99 F., and dermatitis with extensive exfoliation of the epidermis of the entire palm of the hands peeling in one piece. 1. Is there anything in the substance that would be regarded as poisonous to any one? 2. Would any one of these substances cause a "drug rash" on inhalation of fumes of the heated material? 3. Is sensitization to any of these substances common? 4. Should the rash be regarded as one due to sensitization? Would it come under the head of any occupational disease and therefore be regarded as compensative? 5. The patient stated that he knew he could not stand heat; that he had always been sensitive to heat. Would that explain his severe symptoms? Can you give any further suggestions as to the possibilities in this case? Injections of epinephrine improved the condition markedly, even though given several hours after the onset. Epsom salt was given internally and the patient appeared to be well after a few days. He returned to work after about two weeks. He later reported that he had a return of the condition and claimed permanent disability.

SAMUEL A. FUQUA, M.D., CHICAGO.

ANSWER.—In answering all questions of this general type it always is to be understood that replies are in terms of potentialities, and that other possibilities than the one described may fully account for the condition specified. When such substances as resins, beeswax or paraffin are heated to high temperatures, such as would necessarily arise when subjected to the heat of a blow-torch, decomposition products are readily formed. Acids and aldehydes, among other irritants, are easily produced. Acrolein is a common industrial irritant arising from the heating of oily materials. The fact that the workman was carrying out this operation inside a cask compounds the probability of danger. Without implying that this case was due to the hazard described, the specific questions are now answered:

1. Yes—when heated as described.

2. Local action rather than systemic action is the commoner cause of dermatoses of this character.

3. "Sensitization" is a term preferably associated with protein anaphylactic phenomena. True, sensitization probably will not arise, but certainly increased susceptibility is well known as a result of chemical dermatitis.

4. If other possible causes may be ruled out to a practical extent, most states providing compensation for occupational

diseases, including occupational dermatitis, would readily grant compensation for the actual period of disability.

5. Heat is favorable to the causation of many chemical dermatoses. Miliaria may have entered into the condition described, but it is unlikely that it solely accounts for the severe dermatitis mentioned. Without further exposure it is unlikely that a chemical dermatitis will return after once fully cleared up. At the present time chemical dermatoses are prone to secondary invasion by fungi, thus paving the way for persistence and recurrence.

Conjunctivitis and inflammation of the upper respiratory tract are more readily produced than dermatitis. If absent at the onset of the dermatitis, this fact is of medicolegal significance.

SYMPATHECTOMY IN BUERGER'S DISEASE

To the Editor:—I have under my care a man, aged 26, an American of Scotch parentage, who for the past three years has had symptoms of Buerger's disease. At the onset of this disease he noticed that his fingers became pale, cold and numb. Shortly after he complained of a burning sensation in both feet. Five weeks ago he produced an ulceration by rubbing at the base of his second left toe. As this condition did not heal under treatment, the toe was disarticulated at the metatarsophalangeal joint. The condition of this wound is not good. There is a moderate amount of sloughing. No pulsation is palpable in the dorsalis pedis, posterior tibials, popliteals or radial arteries. The blood Wassermann reaction is negative; blood sugar, blood count and urinalysis are normal. At present the patient is receiving diathermy treatments and passive postural exercises. What further therapy would you suggest? Would you think it advisable to perform a periarterial sympathectomy operation? Kindly omit name.

M.D., New York

ANSWER.—Treatment of nonhealing ulcers and amputation sites in cases of thrombo-angiitis obliterans consists in an attempt to increase the amount of blood in the distal parts of the extremities. The most effective means for this purpose is the use of fever. Selected types of typhoid vaccine will produce a systemic fever with a minimum amount of chill, increased surface heat, and circulation in the poorly vascularized areas. Apparently this is accomplished by relaxation of the vasospastic influences present in the collateral circulation. Injections may be given every second or third day, the dosage being gradually increased until signs of healing supervene. If favorable results are not obtained with this method, the prognosis is not good for the ultimate preservation of the limb.

In treating ulcers locally, irritating forms of ointments or lotions should not be used. Boric acid solution applied in moist packs, exposure of the tissue to the air, and keeping the parts warm with intermittent exposures to mild radiant heat are additional measures. If marked increases of surface heat occur in the affected digit with fever, pain is relieved and healing of the ulcer is evident, consideration of lumbar sympathic ganglionectomy is indicated. In other words, unless there is evidence of vasomotor spasm of the collateral arteries, which is temporarily relieved by vaccine therapy, sympathectomy is not indicated. If, however, there is distinct vasodilatation following the administration of protein, attempt is made to determine the amount of vasodilatation, and if the skin temperature can be increased twice that of the mouth temperature during the height of the fever, sympathectomy is indicated.

The procedure preferred is a bilateral lumbar sympathetic ganglionectomy and trunk resection to insure complete interruption of all vasomotor fibers to the lower extremities.

EMOTIONAL CONFLICTS AND CHILD GUIDANCE

To the Editor:—I am anxious to obtain some constructive help along the line of managing a 3 year old girl, who is getting into the habit of crying persistently and severely whenever crossed. The mother is a good disciplinarian and has been strict in her training, but the child has developed this trait and it is becoming markedly worse. The little one has long curly hair and each time it is combed she flies into a tantrum; also when she is crossed in any way she will throw herself on the floor and cry for hours, at times until she is utterly worn out. This condition seems to be growing. After it is all over, she is loving and repentant, but the attacks keep recurring and are really proving a great worry. The family surroundings are ideal. This is the only child. The parents are refined and cultivated. The mother is possibly a little strict and sometimes chastises by corporal punishment, but otherwise is loving and kind. The baby is bottle-fed but has been reared under careful medical supervision as far as the feeding is concerned, has always had the constant care of the mother, and is an ideal child only in this regard. If you could discuss this along the line of corrective training I should appreciate it greatly.

J. C. ROBISON, M.D., Salt Lake City.

ANSWER.—The behavior described is indicative of some emotional conflict between the child and her surroundings; even though the latter may appear ideal, it is still possible that the trouble lies there rather than in the child herself. The first requisite for the rational prescription of a line of corrective training is a study for the purpose of reaching a diagnosis of the actual nature of the conflict; any other procedure must be purely symptomatic. Such a diagnosis should be made as early as possible, for the consequences of uncorrected behavior disorders are often more serious for the future health and happiness of the child than those arising from an undiagnosed physical illness. The only safe advice to be given is that the child should be seen by an expert in child guidance.

BUTYL NITRITE IN INDUSTRY

To the Editor:—I have a patient who is sometimes called on to engage in the manufacture of butyl nitrite. For a period of from three to six hours after being engaged in this work he complains of cyanosis, the lips and hands being noticeably purple. This seems to be worse if some of the finished product comes in contact with the bare hands. A large amount of sulphuric acid and ether are used in the process. The patient does not complain of other symptoms. Can you tell me: 1. What causes the cyanosis? 2. Would it be harmful for him to engage in this work one day out of each ten or twelve days? Kindly omit name.

M.D., Ohio.

ANSWER.—1. The cyanosis described is due to the formation of methemoglobin and nithemoglobin as a result of the action of butyl nitrite. This action is not specific for butyl nitrite but is common to all nitrites in acute poisoning. Butyl nitrite may be expected to produce all the manifestations well known for amyl nitrite, much used in therapeutics and diagnosis. The vasodilatation and hypotension are less obvious under conditions providing lesser exposure, but over a longer time are more pronounced. The following article may be consulted:

Meier, Rolf: Methemoglobin Formation: VII. Nitrite, *Arch. f. exper. Path. u. Pharmakol.* **110:** 241, 1926.

2. No industrial exposure leading to cyanosis is to be condoned.

SYMPATHETIC GANGLIONECTOMY IN RHEUMATOID ARTHRITIS

To the Editor:—Can you refer me to any literature relative to the operative treatment in rheumatoid arthritis? I believe that the Mayos of Rochester, Minn., are doing some work along this line. I understand that it consists in ganglion removal. Has there been any success following this operation and have there been many of these operations performed?

W. A. MARSH, M.D., Mount Pleasant, Pa.

ANSWER.—Sympathetic ganglionectomy and trunk resection have been performed in a small, selected group of patients suffering from polyarthritis, sometimes referred to as atrophic or rheumatoid arthritis. The operation is resorted to only after the usual therapeutic measures have been employed, and then only when the disease is characterized by cold, clammy, wet skin over the extremities, without any evidence of ankylosis, but with a definite vasospasm of the primary and collateral arteries, as determined by the vascular study of protein administration and skin temperature.

ULCERS OF VULVA

To the Editor:—I have a patient who first consulted me eight or nine months ago concerning three ulcers about 25 mm. in diameter on the labia at the labiovaginal junction. She is about 30 years of age, married and has a family. Physically she is normal except for the ulcers, which have persisted more or less in spite of rigid treatment for the past eight months. The urine is normal; there is a considerable degree of leukorrhea. Repeated blood Wassermann tests have been negative. The patient has had rigid antisyphilitic treatment in the form of large doses of neoarsphenamine (eight injections) and two or three courses of bismuth compounds as well as local treatment to the ulcers, such as painting them with pure phenol (carbolic acid), 10 per cent silver nitrate, and 2 per cent mercurochrome-220 soluble, all to no avail. Another ulcer is just commencing. What is your opinion of this case and what would you suggest in the way of treatment? Please omit name and address.

M.D., North Dakota.

ANSWER.—There are a number of conditions which these lesions might be. The most likely are chancroid, granuloma inguinale, cancer and tuberculosis. Chancroid is due to an infection with the Ducrey streptobacillus and this organism may readily be found at the base of the ulcers that it produces. Usually these ulcers have an undermined edge and a grayish-yellow base. True syphilitic chancres, on the other hand, are indurated. Chancroid ulcers are extremely sensitive and frequently associated with enlarged, tender inguinal glands. Treatment consists of thoroughly washing the parts with soap and water two or three times a day and the administration of a daily douche of potassium permanganate 1:5,000. Cleanliness

is most essential. Ice bags should be applied to the inguinal glands, but if the latter become inflamed and soft they may have to be incised and drained.

Granuloma inguinale usually occurs in Negresses. The ulceration is progressive and is generally associated with excessive granulation tissue. The latter is covered with a scanty mucoid discharge which, when removed, exposes a clean, red, bleeding surface characteristic of healthy granulation tissue. The edge of the ulcers is slightly raised and the lesions are not especially painful. Biopsy of these ulcers reveals an abundance of young connective tissue with proliferating blood vessels and many lymphocytes, plasma cells and polymophonuclear leukocytes. In addition, one finds the characteristic Donovan organisms, which are gram negative, encapsulated and intracellular, and are readily seen in smears. The treatment of granuloma inguinale is by means of intravenous injections of 1 per cent solution of antimony and potassium tartrate, which acts as a specific. Injections are given on alternate days, beginning with 0.04 Gm. and increasing rapidly up to 0.1 Gm. A cure is usually obtained in fifteen or twenty days.

Cancer of the vulva is uncommon, it is usually extremely malignant, and it generally occurs in older women though it may occur in young women. It is usually superimposed on a chronic inflammation such as leukoplakia or kraurosis vulvae. There are three histologic types: squamous, medullary and adenocarcinoma. The squamous type is the most frequent. There is nearly always itching, burning and a discharge. The inguinal and femoral glands are involved early. A small piece of tissue should be excised for diagnosis and, if cancer is found, an operation must be performed without delay. A complete vulvectomy has to be done and the inguinal and femoral lymph glands must be removed. The prognosis is not good. For inoperable cases, radium should be used locally to the lesions and roentgen therapy for the glands.

Tuberculosis of the vulva is extremely rare and it is often found associated with tuberculous lesions elsewhere in the body, such as the lungs, kidneys, genital organs and glands. Young girls may have these lesions. A piece of tissue should be removed for diagnosis. Histologic examination will reveal giant cells and perhaps tubercle bacilli. If the disease lasts a long time, pyogenic organisms invade the lesions, and the inguinal glands become inflamed and may suppurate. Treatment of the tuberculous lesion consists of extensive removal of the involved area and also some tissue around it. The electrical cautery is better than the scalpel for this purpose. The local results of this form of treatment are good, but tuberculosis in other parts of the body may affect the general prognosis.

PARALYSIS AGITANS

To the Editor:—Kindly give me the present status of the curative treatment of paralysis agitans in a girl, aged 17 years. She has slight rigidity but marked tremor, which is fairly well controlled by either scopolamine hydrobromide or tincture of stramonium. I have heard that sympathectomy will remove the tremor. Would you advise such a procedure? Please omit name.

M.D., New York.

ANSWER.—Little can be accomplished in cases of paralysis agitans by sympathectomy. The operation tried in several instances has had discouraging results. Royle is rather optimistic about sympathectomy for paralysis agitans, but all that can be expected is slight reduction in the spasticity. The tremor is not altered, nor is the progress of the disease checked by sympathetic ganglionectomy and ramisectomy.

ERYTHEMA

To the Editor:—What is the best course of procedure to follow in this situation? A woman, weighing 150 pounds (68 Kg.), received eight intravenous injections of neoarsphenamine, the last two being 0.9 Gm. She then took mercury inunctions of one-half drachm (2 Gm.) of mild mercurial ointment daily except Sunday for three weeks. By the end of the third week a very itchy erethema appeared on the neck and face, extending in a few days to the trunks, arms, and finally to the legs. The redness and itching were followed in a few days by swelling of the arms and eyelids, more severe redness, and much burning. This soon developed into many small vesicles, which later ran together and broke, leaving a major part of the face, trunk and arms a raw, weeping, tender surface. The swelling of the arms and legs was accompanied by extreme tenderness and aching. Ten days after the onset of the eruption crusts began to form, which gradually came off. In places where the skin is allowed to dry there is a fine scaly desquamation. The urine has been examined daily without the discovery of casts or albumin. The temperature has been irregularly around 100 F.

LOUIS LEFEVRE, M.D., Muskegon, Mich.

ANSWER.—Sodium thiosulphate should be given intravenously, 0.3 Gm. once a day, the amount being increased to 1 Gm., and when this dose is reached, only every other day. If this agrees with the patient it can be continued and gradually decreased as she improves. The "colloid" bath can be used for from ten minutes to a half hour several times a day. It is made by dissolving a cupful of sodium bicarbonate in a half tubful of water at a temperature of about 100 F., and then adding oatmeal, three cupfuls, which has been previously boiled and put in a bag of cheesecloth. This bag is gently squeezed in the bath until the water becomes opalescent. The temperature of the water should be at least 98 F. before the patient enters the bath. Exposure to cold should be avoided. On leaving the bath, the patient must be patted dry, or nearly dry, and at once anointed with 10 per cent boric acid in petrolatum, ointment of rose water, or something similar. Nutritious food, pleasant surroundings, encouragement, and sufficient but not excessive fluids, are of course necessary. One should watch over the emunctories.

The patient should not be left alone in the bath. She should not scratch, and boils, abscesses or bed sores should be watched for. This seems to be a rather mild case and the prognosis should be good but always guarded, for the unexpected sometimes happens.

ULTRAVIOLET IRRADIATION AFTER ROENTGEN THERAPY

To the Editor:—Will you please advise me as soon as possible whether there is any contraindication for ultraviolet treatments following roentgen therapy. The particular case that I have in mind at this time is one of epidermophytosis of both hands in which five sixths of an erythema dose has been given, 5 milliamperes, 120 kilovolt peak, 1 mm. aluminum filter, 30 cm. distance.

M. V. FAHEY, Indianapolis.

ANSWER.—There is no contraindication for the use of ultraviolet treatments following roentgen therapy. At one time ultraviolet radiation was rather widely used as treatment in roentgen burns and at that time was considered helpful. The recent consensus seems to be that there are no beneficial results in treatment of excessive roentgen dosage.

POSSIBLE DIAGNOSIS OF CARCINOMA OR SARCOMA

To the Editor:—Last November a man about 50 years of age came to me complaining of pain in the region of the trochanter of the right femur. It was his impression and mine at the time that it was rheumatoid arthritis. He had been bathing in August and during his vacation and had been knocked down by a wave and was under the impression that he might have bruised it, although he had no definite memory of this. The pain continued in spite of heat and various rheumatic remedies, and a distinct swelling developed over the trochanteric region. At this time I had an osteosarcoma in another man that developed from a slight bruise, so I roentgenographed the femur, but the bone seemed in every way perfectly healthy. The swelling seemed to be entirely in the soft parts. He came to me for relief of pain and I gave him various remedies over a period of two months. He tells me that he has been working right along, has lost 8 pounds (3.6 Kg.) and has been to no other physician, but has taken considerable acetylsalicylic acid for pain. About a month ago he began taking some special kind of hot bath, and some tarry oil was applied at the site of the pain. There is an induration of the thigh over the anterior and outer aspect extending from the trochanteric region half way to the knee. The whole leg seems enlarged but not particularly hard. The region where the irritant has been applied is darkened, and at about the middle of the thigh on the outer side is a spot about 30 mm. in diameter where the epidermis is off much like a blister; around this the skin is reddened and hardened. The hair roots in this area stand open distinctly and are somewhat inclined to be purulent. There is considerable serum exuding from this raw surface. It is limpid but not purulent. During examination, several drops ran down on the leg. I am anxious for any suggestion as to what this might be. Is there any type of infection that could go on for seven or eight months without formation of pus? It does not seem that it could be a neoplasm. There are no definite boundary lines, increase in size at the original site of swelling, or fever.

M.D., Ohio.

ANSWER.—This patient, aged 50, was bruised by a wave in August, following which there was pain and swelling over the trochanter. In November, three months later, there was the swelling in the soft parts. The roentgenogram showed normal bone. He was under care for two months without relief. He then received treatment with hot baths and some oil, following which there was induration of the soft parts from the trochanter half way down to knee, and the whole leg seemed enlarged.

The patient should be sent to a hospital at once where biopsy and culture can be done. Before doing this, a roentgenogram should be taken of the chest and the pelvis with both femurs. The roentgenograms and sections of biopsy can be submitted, if necessary, to consulting roentgenologists and pathologists. The induration of the soft parts now present could be explained by his treatment. The negative roentgenogram in November is evidence against a bone lesion. To repeat, the patient has reached a stage at which biopsy is essential in the presence or absence of a malignant condition. Should it prove malignant, the patient should have high voltage roentgen therapy first.

DERMATITIS VENENATA FROM ARSPHENAMINE

To the Editor:—A housewife, aged 26, had a cough. There was a heavy feeling in the chest. She was weak, nervous, under weight and pale. She had been married several years but had had no pregnancies. The pupils were irregular and unequal and reacted sluggishly and slightly to light; one area of bronchial breathing was heard over the right middle lobe. The temperature was 99.2 F. The blood Wassermann reaction was 2 plus. Neoarsphenamine, 0.6 Gm. intravenously each week, was given. After one treatment the fever disappeared and the cough became less and she felt much better. After she had had five weekly neoarsphenamine treatments, there appeared a generalized urticarial eruption, intensely pruritic; after a few days the itching became less, but the rash persisted and changed to a maculopapular type present only on the arms and legs. Treatments were discontinued for three weeks and then resumed for three more treatments (eight treatments of 0.6 Gm. of neoarsphenamine altogether). A Wassermann reaction of the blood was negative. She was put on potassium iodide, 10 grains (0.65 Gm.) four times daily, and no other medication was given for six weeks. She was then given sodium bismuth thioglycollate (thiobismol) intramuscularly, 2 Gm. at weekly intervals, and at present has had six treatments. She was unable to take more intensive treatment because of lack of funds. At present she looks fairly healthy, is gaining weight, has no cough, and the only thing bothering her (and me) is the rash on the arms and legs, which refuses to clear. The eruption is maculopapular in type. The papules are only slightly raised from the center of the macules and have no collaret scale; in many places the macules are so numerous that they are confluent; itching is present only when she becomes overheated. Her husband's Wassermann reaction was found to be + + +, and he is at present under treatment. Suggestions as to the nature of her eruption and what to for it will be greatly appreciated. Please omit name.

M.D., Wisconsin.

ANSWER.—The eruption is the remains of the dermatitis venenata caused by neoarsphenamine. Intravenous injections of sodium thiosulphate should be given, beginning with 0.3 Gm. and increasing to 1 Gm., once or twice a week for five to ten doses. Calamine lotion several times a day, or zinc paste applied thinly twice a day may be used locally, 5 per cent of rectified oil of birch tar, N. F., being added to the paste when the improvement ceases under the milder application. Or, when the first mentioned preparations seem to be unable to produce further improvement, 2 Gm. of crude coal tar and 2 Gm. of zinc oxide in enough petrolatum to make 30 Gm. may be applied thinly twice a day, and the skin cleansed with oil.

Further treatment should consist largely of mercury, bismuth compounds and iodides. The nervous system should be carefully examined and a spinal fluid examination should be made to determine whether infection in the central nervous system calls for more intensive treatment. In that case, if the patient cannot stand small doses of the arsphenamines, foreign protein therapy with typhoid vaccine may be helpful.

BISMUTH PREPARATIONS IN SYPHILITIC OPTIC ATROPHY

To the Editor:—At present I have a man, aged 30, under my care with early primary optic atrophy, the chief pathologic changes being in the right eye. Six or seven years ago he contracted syphilis. About one year from the time of the appearance of the primary lesion he took several intravenous and intramuscular injections administered by another physician. Before this first course of treatments the Wassermann reaction was 4 plus. The patient went untreated until about two months ago, when a blood test again showed a 4 plus reaction. At this time he complained of occasional blurred vision and blurred vision at the side. He complained also of pain and photophobia, particularly in the right eye. An ophthalmologist diagnosed the condition as early primary atrophy. Up to the present the patient has received about twelve intramuscular injections of bismuth salicylate, 2 grains (0.13 Gm.). He is still getting this medication twice weekly. Kindly advise me regarding the course to be pursued from now on in this case. Should I continue intramuscular treatment of bismuth salicylate? If so, how long? Because of the optic atrophy, should I use arsphenamines later on? The ophthalmologist also reported contracted fields. Is it possible for primary optic atrophy to occur only six or seven years after the initial infection? Will the eye condition improve under antisyphilitic treatment?

MAURICE MENZALORA, M.D., Chicago.

ANSWER.—The intramuscular use of bismuth salicylate in the case outlined is eminently proper and is considered by the majority of authorities the safe course to pursue under these circumstances. Arsphenamine or any of the arsenic preparations present a definite element of danger in involvement of the optic nerve, particularly in the atrophies that appear relatively soon after the primary infection. After the complete intensive course of bismuth injections has been completed, mercurial injections or inunctions with moderate sized doses of iodides should be resorted to until another course of bismuth may be started. When primary optic atrophy appears in a younger individual in a relatively short time after the primary infection, the visual prognosis is very poor and the extreme probability is that the atrophy will progress to complete blindness, despite all treatment.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 8. Sec., Dr. Harry C. DeVighne, Juneau.

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Indianapolis, Sept. 12. Sec., Dr. Wm. H. Wilder, 122 South Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Indianapolis, Sept. 12. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha, Neb.

ARIZONA: Phoenix, Oct. 6-7. Sec., Dr. B. M. Berger, 12 N. Central Ave., Phoenix.

CALIFORNIA: *Reciprocity.* Los Angeles and San Francisco, Sept. 18. Sec., Dr. Charles B. Pinkham, 420 State Office Building, Sacramento.

COLORADO: Denver, Oct. 6. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, Oct. 10. Address, State Board of Healing Arts, 1895 Yale Station, New Haven.

IDAHO: Boise, Oct. 6. Commissioner, Hon. Emmitt Pfost, Boise.

ILLINOIS: Chicago, Oct. 13-15. Supt., Mr. Paul B. Johnson, Springfield.

MICHIGAN: Lansing, Oct. 13-15. Sec., Dr. F. C. Warnshuis, 1010 Maccabee Bldg., Detroit.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 6-7. Sec., Dr. J. C. McKinley, 126 Millard Hall, Minneapolis.

MONTANA: Helena, Oct 6. Sec., Dr. S. A. Cooney, Power Block, Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examinations will be held at various cities throughout the country where five or more candidates are enrolled, Sept. 14-16. Ex. Sec., Mr. Everett S. Elwood, 225 South 15th St., Philadelphia.

NEBRASKA: *Basic Science.* Lincoln, Oct. 6-7. Acting Sec., Mr. P. H. Bartholomew, Lincoln.

NEW HAMPSHIRE: Concord, Sept. 10-11. Sec., Dr. Charles Duncan, Concord.

NEW MEXICO: Santa Fe, Oct. 12-13. Sec., Dr. P. G. Cornish, Jr., 221 W. Central Ave., Albuquerque.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 28 to Oct. 1. Chief, Mr. H. J. Hamilton, Room 315, State Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Sept. 8-9. Sec., Dr. J. M. Byrum, Shawnee.

RHODE ISLAND: Providence, Oct. 1-2. Dir., Dr. Lester A. Round, 319 State Office Building, Providence.

WISCONSIN: *Basic Science.* Madison, Sept. 19. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, Oct. 5. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne.

Idaho April Report

Hon. Emmitt Pfost, commissioner, law enforcement, of Idaho, reports the oral and written examination held at Boise, April 7-8, 1931. The examination covered 13 subjects and included 130 questions. An average of 75 per cent was required to pass. Three candidates were examined, all of whom passed. Four physicians were licensed by the endorsement of credentials. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent
Northwestern University Medical School	(1931)	97
College of Physicians and Surgeons of Chicago	(1903)	85
State University of Iowa College of Medicine	(1929)	95

LICENSED BY ENDORSEMENT		
College	Year Grad.	Endorsement of
George Washington University School of Medicine	(1927)	Ohio
Rush Medical College	(1907)	Utah
Jefferson Medical College of Philadelphia	(1903)	Wisconsin
Vanderbilt University School of Medicine	(1920)	Tennessee

Florida June Examination

Dr. William M. Rowlett, secretary, Florida State Board of Medical Examiners, reports the written examination held at Jacksonville, June 15-16, 1931. The examination covered 10 subjects. An average of 75 per cent was required to pass. Thirty-seven candidates were examined, 36 of whom passed and 1 failed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent
Birmingham Medical College	(1910)	79.9
University of Arkansas School of Medicine	(1928) (1929) 85.4, 87.4	88.1
College of Medical Evangelists	(1918) 78.4, (1930)	85.4
Emory University School of Medicine	(1930) (1931) 84.1, 84.6, 85.5, 88.2, 91.4	87.6,
University of Georgia Medical Department	(1930) 83.5, (1931)	88.1
Northwestern University Medical School	(1906)	78.7
Tulane University of Louisiana School of Medicine	(1928) (1931) 84.5, 86.6, 87.2	85.4
Maryland Medical College	(1903)	80.5
Tufts College Medical School	(1910)	80.1
University of Michigan Medical School	(1930)	84.1
Columbia University College of Phys. & Surgs.	(1901) (1929) 87.1	88.2,

Syracuse University College of Medicine	(1930)	83.6
University of Cincinnati College of Medicine	(1929)	84.3
Western Reserve University School of Medicine	(1930)	85.9
Hahnemann Medical College and Hosp. of Philadelphia	(1900)	82.1
Jefferson Medical College of Philadelphia	(1931)	82.5, 89.9
University of Pennsylvania School of Med.	(1930) 89, (1931)	84.9
University of Nashville Medical Department	(1904)	77.7
University of Tennessee College of Medicine	(1930)	81.9
Medical College of Virginia	(1919)	79.3
University of Havana Faculty of Med. and Pharmacy	(1921)*	78.8

FAILED

College	Year Grad.	Per Cent
St. Louis College of Physicians and Surgeons	(1897)	72.6

Dr. Rowlett also reports one candidate licensed by special exemption, Jan. 6, 1931. The following college was represented:

LICENSED BY SPECIAL EXEMPTION

College	Year Grad.
Bellevue Hospital Medical College	(1880)

* Verification of graduation in process.

Oregon Reciprocity Report

Dr. C. J. McCusker, secretary, Oregon Board of Medical Examiners, reports 6 physicians licensed by reciprocity with other states from Jan. 1 to June 1, 1931. The following colleges were represented:

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
Northwestern University Medical School	(1903)	Illinois
Rush Medical College	(1917)	Utah
University of Louisville School of Medicine	(1922)	Penna.
Columbia University College of Phys. and Surgs.	(1925)	Minnesota
University of Oregon Medical School	(1929)	Washington
Osteopath		Washington

Book Notices

THE PRINCIPLES OF EPIDEMIOLOGY AND THE PROCESS OF INFECTION. By C. O. Stallybrass, M.D., D.P.H., Chief Assistant Medical Officer of Health, City and Port of Liverpool. Cloth. Price, $8.50. Pp. 696, with 104 illustrations. New York: Macmillan Company, 1931.

The growth of interest in the problems of epidemiology is evidenced by this book. It contains a large amount of material of great value to all students of infectious diseases and is sure to appeal especially to workers in the field of public health. A brief and yet adequate discussion of statistical methods is followed by chapters on the invading organism, its virulence, toxicity, variability and other qualities—not forgetting the bacteriophage. Natural, specific and acquired resistance are treated in succeeding sections, perhaps with more detail respecting immunologic theory than is desirable in a work of this character. Five chapters on various aspects of sources and modes of infection deal fully and clearly with such topics as reservoirs of infection, persistence of infection in carriers, the importance of droplet infection, and the rôle of human activities, such as travel, schools, pilgrimages, emigration and wars, in spreading infection. Two excellent chapters follow on general questions such as dispersibility, the epidemic wave, "experimental epidemiology," periodicity and seasonal incidence. The book concludes with a discussion of quarantine, isolation, carrier control, control of insect vectors, protective inoculation and other prophylactic measures. The last chapter might well have been expanded and some topics in it handled more judiciously. Some readers will wonder why space is given to citing an instance in which bacteriophage was added to well water to stop a cholera epidemic, while no mention is made of other and really significant procedures, such as the use of arsenic dust to destroy Anopheles larvae. There are two appendixes, one a useful table of $\sqrt{pq}$ for calculating probable error, taken from Miner's article in the *American Journal of Hygiene*, the other a scheme of classification of bacteria compiled from Bergey's Manual. The bibliography, of twenty-six pages, will doubtless be found useful but might readily have been made more representative and complete. The index seems adequate. Minor points for criticism appear throughout the book. Needless repetitions, as in the references to Goodall's work on pages 5 and 16, are by no means lacking. It is not quite correct (page 125) to cite Flexner and Amoss as stating that the "organisms" of poliomyelitis put into the blood stream rapidly decrease "in numbers and possibly also in infective power." A wrong impression may be conveyed by the statement (page 474) that cholera, though it has "traversed the Atlantic on a number of occasions," has "never obtained the same foothold in America as in the Old World." Dr. Stallybrass perhaps forgets the great loss of life from cholera in many American cities in 1832 and 1833, when the disease crossed the Rockies and reached the Pacific Coast and also seriously affected Canada, Mexico and Cuba. In writing of cholera in the United States in 1854, Hirsch records that the "whole interior of the country" was "overrun by it." The book is well printed and illustrated and there are few typographic errors.

A COMPARATIVE STUDY OF VACCINATION WITH LIVING TUBERCLE BACILLI AND WITH SPECIAL REFERENCE TO B. C. G. By E. A. Watson, Chief Pathologist, Animal Diseases Research Institute, Department of Agriculture, Hull, Quebec, Canada. Eleventh International Veterinary Congress, London, 1930. Paper. Pp. 30. London: John Bale, Sons & Danielsson, Ltd., 1930.

The report gives the main features, experimental evidence, and results of investigations relating to B C G undertaken by the Dominion Department of Agriculture, Health of Animals Branch, at the Animal Diseases Research Institute, Ottawa, Ont. The questions chiefly concerned are those of virulence and immunizing efficacy; and in this connection three original strains of B C G were under propagation and study. For comparative study, a strain of bovine tubercle bacilli, of ordinary or average virulence, was used in certain vaccination trials running parallel with those of B C G. The experiments with cattle were started in January, 1925, and have continued to July, 1930. Vaccinal immunity, or "premunization," was tested by inoculation of measured doses of virulent bacilli and by natural exposure to tuberculous infection under farm conditions. In the trials by natural exposure, 1925-1927, the calves were vaccinated and treated in accordance with the Calmette-Guérin procedure as originally recommended, and, in subsequent trials under the new conditions of isolation, as advised in 1927. The trials varied in duration from a few months up to four and one-half years. Laboratory necropsies on seventy-two cattle revealed evidence of tuberculosis lesions in 78.4 per cent of cattle vaccinated with B C G, 90 per cent of cattle vaccinated with virulent bovine tubercle bacilli, and 75 per cent of the unvaccinated controls. Virulent bacillary infection of lesion-free lymphatic glands and of vaccinal nodes taken at the end of immunity trials is shown and attention drawn to the possible dangers arising therefrom. B C G possesses a latent virulence for guinea-pigs manifest, as a rule, in only a small percentage of test animals and after a long period of incubation or tolerance. A comparative study over a period of five or six years does not substantiate the claims made for B C G vaccination as an efficient means of protection against bovine tuberculosis. The opinion is given that, with the results thus far obtained and the knowledge available, the use of B C G is contraindicated in the control of bovine tuberculosis in Canada, where the incidence of the disease and the conditions that prevail are favorable to the success of drastic methods aiming at the destruction of the sources of infection.

IDEAL MARRIAGE: ITS PHYSIOLOGY AND TECHNIQUE. By Th. H. Van de Velde, M.D. Translated by Stella Browne. Introduction by J. Johnston Abraham, C.B.E., D.S.O., M.D. Cloth. Price, $7.50. Pp. 323, with 8 illustrations. New York: Covici, Friede, 1930.

Foreign publishers and foreign authors are apparently beginning to give more and more attention to the physical aspects of successful marriage. In this volume, a distinguished Dutch physician discusses the subject with a sincerity and directness far beyond that available in any other serious book thus far available. He concerns himself with both the esthetics and the technic of marriage contacts, basing his advice and presentation on the special writings in this field that have appeared not only in Europe but also in the Far East. The book has had a tremendous sale. If one discounts sufficiently what might be called the overenthusiasm of the author for his subject and his willingness to sacrifice almost every other aspect of marriage for the physical side, the book will be properly evaluated. Indeed, most physicians are familiar with the major portions of the book, but the presentation will nevertheless be found interesting.

THE MECHANISM OF THE HEART AND ITS ANOMALIES: ANATOMICAL AND ELECTROCARDIOGRAPHIC STUDIES. By Émile Géraudel, Chief of the Laboratory of the Faculty of Medicine of the University of Paris. Translated, with an introduction by Louis Faugères Bishop, M.A., M.D., Sc.D., President of the Good Samaritan Dispensary, and Louis Faugères Bishop, Jr., Ph.B., M.D., Adjunct Attending Physician, Bellevue Hospital, New York City. Cloth. Price, $10. Pp. 266, with 200 illustrations. Baltimore: Williams & Wilkins Company, 1930.

Geraudel is chief of the electrocardiographic and anatomic pathologic laboratories of Professor Vaquez's Clinic at the Hôpital de la Pitié. The book contains a foreword by Vaquez. It presents a new hypothesis of the mechanism of the heart beat and a new explanation of the arrythmias. Geraudel's theory may be best appreciated in his own words in the summary:

> The classical theory of the cardiac mechanism has lost much of its simplicity by reason of the additions and embellishments which it has had to undergo in order to remain in harmony with facts successively discovered. Nevertheless, it always rests essentially on this idea, that the auricle is closely connected with the ventricle, whence the coordination of their movements.
>
> The auricle and ventricle, it is still said, are connected by a special bundle, the bundle of His. Now the bundle of His has the same structure as the sino-auricular node, to which is attributed a very different function, namely, that of a motor center. Contrary to this opinion, we attribute the same function to these two similar formations which we call the cardionectors, the sino-auricular node, or atrionector, being to the auricle what the bundle of His, or ventriculonector, is to the ventricle.
>
> Thus the atrionector and the auricle on the one hand, and the ventriculonector and the ventricle on the other, constitute two parts which act independently of each other. This conception is further confirmed by the distribution of the vessels of the heart. We have, in fact, shown that each cardionector has its own circulation, with one terminal artery for the atrionector and another for the ventriculonector.
>
> This is the conception which has seemed to us to accord best with the clinical data and the anatomical findings. It is then its own circulation which is the chief regulatory mechanism of the heart. The anomalies are due less to the condition of the heart itself than to that of its blood vessels.

While this hypothesis stresses the importance of the intrinsic blood supply of the heart, it cannot be said to be entirely new or to constitute a radical departure from currently accepted views. Nevertheless, the book, which is limited to 500 copies, is refreshing and stimulating, is beautifully presented with beautiful illustrations, shows evidence of prodigious industry and thoughtful, critical analysis of the subject, and will remain a credit to its author, the clinic sponsoring it, the translators and the publisher.

DIE CHIRURGIE DES PRAKTISCHEN ARZTES. Von Professor Dr. Erich Sonntag, Direktor des Chirurgisch-Poliklinischen Instituts der Universität Leipzig. Paper. Price, 49 marks. Pp. 879, with 684 illustrations. Leipzig: Georg Thieme, 1931.

This book is written in commemoration of the one hundredth anniversary of the surgical outpatient clinic of the University of Leipzig, of which the author is the present director, and is dedicated to his predecessors. It is intended to fill a gap in the surgical education of general practitioners, particularly those in the country who have not had an extensive training and yet prefer or are compelled to do their own surgery. It is devoted, therefore, essentially to complete discussion of all the surgical conditions considered more or less minor. The so-called major procedures are described only as they may have to be performed in emergency. For instance, a great deal of space is given to a detailed description of the treatment and after-care of empyema in its various stages, whereas the treatment of diaphragmatic hernia is described in twenty lines. Similarly, in the chapter on gastro-intestinal surgery only the urgent operations are considered in detail, the procedures of election being only barely mentioned. The first thirteen chapters of the book are limited to general surgery and include extensive excellent discussions of asepsis, anesthesia, general and local hemorrhage and its treatment, including blood transfusion, wounds and their management, fractures and dislocations, acute and chronic surgical infections, amputations and bandaging. The second part is devoted to special surgery. Each part of the body is discussed in detail according to the following general plan: malformations, injuries, inflammation and tumors. Throughout the book it is evident that it is not a textbook or a summary of textbooks. It is rather an accurate guide for the practitioner to follow based on the personal knowledge and the author's extensive experience in all phases of the surgical procedures presented. Essentially it is a book on what to do and how to do it. No space is devoted to theory. The important points in the etiology, diagnosis and differential diagnosis are mentioned in describing the clinical picture of the condition discussed. Emphasis is placed on surgical indications; that is, when the surgical intervention should be instituted. By far the most important part is devoted to surgical therapy; that is, how to do it. Not only is every step in the condition under discussion minutely described, but the preparation, armamentarium, complications and their treatment are also included. Numerous photographs, drawings and simple diagrams illustrate the text. A surgical pharmacopeia that includes many useful hints is appended. The book more than fulfils its purpose. It not only is of inestimable value to the general practitioner but will prove useful to the trained surgeon.

INTERNATIONAL REGISTER OF SPAS AND MEDICINAL WATERS. Compiled by the Standard Measurements Committee of the International Society of Medical Hydrology. Section 1: Embodying Approved Directions for Exhibiting—1. Chemical Analysis. 2. Physical Properties. 3. Medicinal Classification. 4. Data Concerning Spas. (Approved by the Council, March 21st, 1931.) Paper. Price, 1s. Pp. 20. London: Headley Brothers, 1931.

This is an outline for international use for standardizing the manner of reporting analytic and other data relative to medicinal waters. A scientific scheme is proposed for classifying and describing waters chemically, physically and medicinally, this information to be made a part of national registers of waters. The terms in which the data are to be concisely expressed are defined. The style, composition of the "register," and the directions for printing are offered. Complete data on a spring are given as an example. The standardization of information of this character is commendable.

JUNGLES PREFERRED. By Janet Miller. Cloth. Price, $3.50. Pp. 321, with illustrations. Boston: Houghton Mifflin Company, 1931.

The author is a woman missionary physician who has spent ten years in China and Japan and who was sent off in an emergency to fill a man's place as physician to a mission in the Belgian Congo, in the heart of Africa, because no man could be found for the job. The book, instead of being just another recital of altruism, self-sacrifice and abnegation, is a delightful book of travel. Most medical writers could take a course in writing from the author. Her style is direct and clear, lively and vivacious, full of humor and happy allusions, and is as informative on the conditions and experiences that she met as one could ask. She represents the best type of worker in the Lord's vineyard. She is devoted and dedicated to her work, and, what is equally important, has had the preparation to make her useful. But—the great contrast—she is sophisticated and wise in the ways of the world and she can appraise casually and jocularly the callow individual whose ideals are Broadway or Piccadilly and night clubs, as well as an African cannibal. This is the rare travel book of the right sort. It gives one a vivid impression of the traveler's experiences and of the places where she has been—and Dr. Miller has certainly been in out of the way places. The only unfavorable criticism that can be made of the book is that it has no map; no travel book is entirely satisfactory without a map of its region. Dr. Miller ought to write some books on her experiences in China and Japan.

PRACTICAL DIETETICS FOR ADULTS AND CHILDREN IN HEALTH AND DISEASE. By Sanford Blum, A.B., M.S., M.D., Head of Department of Pediatrics and Director of the Research Laboratory, San Francisco Polyclinic and Post Graduate School. Fourth edition. Cloth. Price, $4. Pp. 380. Philadelphia: F. A. Davis Company, 1931.

Dietaries employed by the author for twenty years for infants, children and adults in health and in disease are presented under captions of disease or other titles arranged in alphabetical sequence for ready reference. The theories of nutrition are not considered, the purpose of the book being entirely practical. Foods listed are classified under the headings of "permitted" and "forbidden." "Type meals" are incorporated wherever deemed necessary. The book should be suggestive to physicians in planning out diets and of service in the prescribing of dietaries.

LES FOYERS AMYGDALIENS. Par G. Worms, professeur au Val-de-Grâce, et J. M. Le Mée, laryngologiste des Hôpitaux et de l'"American Hospital" de Paris. Paper. Pp. 502. Paris: Imprimerie Chantenay, 1931.

In this book the subject of focal infection is again brought to the attention of the medical profession and emphasis laid on the part played by the faucial tonsils as definite foci of infection. In order to determine if possible the general attitude of laryngologists, an extensive questionnaire was sent to many men in many countries and the replies were analyzed and classified. The largest number of answers was received from the United States, Great Britain and France. It is possible to mention only a few of the questions: Do you believe that the tonsils may constitute a portal of entry and a focus for secondary infection? What place do you assign to the tonsils among other generally accepted foci; namely, the teeth, ears, sinuses, gallbladder and prostate? On what signs do you place your opinion that the tonsil may be a cause of secondary infections? What are the relations between tonsillitis and various forms of septicemia; between the tonsils and various forms of rheumatism; between the tonsils and disorders of the circulatory system, in particular endocarditis, pericarditis and myocarditis? Replies to the first question were almost unanimously affirmative. Regarding the other subjects, of which there were a considerable number, there was considerable diversity of opinion. This is not at all startling in view of the fact that the determination of tonsil culpability is often a matter of personal equation, since there are many instances in which no definite objective signs or symptoms can be depended on to render a decision. Among the general conclusions, the authors state that the tonsils appear to be the portal of entry for infections in most cases of acute rheumatism. They say that tonsillectomy has an unquestionable influence on acute rheumatism and rheumatic fever; that tonsillectomy is of secondary importance in accompanying growths and has almost no importance at all in chorea. Innumerable details are given in this analysis of the questionnaire which do not lend themselves to a short review. The study of these details is valuable not only for the information therein contained but in showing many points regarding the influence of the tonsils as foci for some infections that have as yet not been definitely determined. While infection from the tonsils is responsible for many conditions, it is not fair to blame the tonsils for all the ills that flesh is heir to. In a word, it is necessary to judge the body as a whole in dealing with infections of various types and not to ascribe too much importance to any one structure. Infection of the tonsil undoubtedly is the cause of many local and systemic disturbances, and the removal of this structure has in thousands of cases wrought benefit to the individual; but indiscriminate operating should be frowned on. The perusal of this work should prove of value to every physician who treats diseases of the throat.

THE ANATOMY OF THE NERVOUS SYSTEM FROM THE STANDPOINT OF DEVELOPMENT AND FUNCTION. By Stephen Walter Ranson, M.D., Ph.D., Professor of Neurology and Director of the Neurological Institute, Northwestern University Medical School. Fourth edition. Cloth. Price, $6.50. Pp. 478, with 341 illustrations. Philadelphia: W. B. Saunders Company, 1931.

This edition, like previous editions, was prepared primarily for the use of students engaged in a study of the anatomy of the nervous system. The book begins with a chapter on the origin and function of the nervous system. A chapter is devoted chiefly to the embryology of the nervous system and then chapters follow dealing with gross and microscopic anatomy. The book leads the student at the beginning of his neurologic studies to think of the nervous system in relation to the rest of the living organism. Emphasis is laid on the developmental and functional significance of structure as well as on those parts of the subject which the student is most likely to find of value in his subsequent work. The more important additions to the science of neurology made during the last generation are included in the text. There are numerous illustrations, made mostly from drawings prepared for this book, and an extensive bibliography to assist one in evaluating the evidence from which certain new or disputed points are discussed. The terminology, for the most part, used is that of the Basle Anatomical Nomenclature in its English form, but in some cases in which these terms are misleading, other names have been substituted. There are many full page illustrations of transverse sections of the brain stem at different levels, and these are accompanied by descriptive material. Then follows a laboratory outline of neuro-anatomy intended to guide the student so as to make the best use of his laboratory material. A book of this kind impresses the reader with the great complexity of the organization of the nervous system and with the many discoveries that have been made in recent years. There is, however, an immense amount of research to be done before the symptoms and pathology of nervous and mental diseases are fully understood.

THREATENING SHADOWS. By Victor Vecki. Cloth. Price, $2.50. Pp. 262. Boston: Stratford Company, 1931.

Novels by physicians are of two types. They include fiction prepared by physicians who are primarily literary artists, and fiction written by those who are primarily physicians. Of the second type is this novel by Dr. Vecki. His practice in California and perhaps an exciting and varied career form the basis of the story. The book serves a purpose in warning of the insidious onset of glaucoma. The author suggests the importance of early scientific treatment. Unfortunately, the book is so lacking in style that it seems at times to resemble those literary burlesques that have been prepared by more sophisticated authors with their tongues in their cheeks.

PRATIQUE MÉDICO-CHIRURGICALE. Publiée sous la direction de A. Couvelaire, A. Lemierre et Ch. Lenormant, professeurs à la Faculté de médecine de Paris. Tome V: Intestin grêle (tumeurs)—Niaouli. Tome VI: Nicotine—Podophylle. Third edition. Boards. Pp. 950; 988, with illustrations. Paris: Masson & Cie, 1931.

The first four volumes of this interesting set of books have recently been reviewed. To this review nothing need be added about these two volumes. Apparently they are just as complete, just as well illustrated and just as valuable as the ones that have preceded.

DIABETES: ITS TREATMENT BY INSULIN AND DIET. A HANDBOOK FOR THE PATIENT. By Orlando H. Petty, A.M., M.D., F.A.C.P., Professor of Diseases of Metabolism, Graduate School of Medicine, University of Pennsylvania. Fifth edition. Cloth. Price, $2. Pp. 231, with 13 illustrations. Philadelphia: F. A. Davis Company, 1931.

That this little volume has gone to the fifth edition in comparatively a short time is significant of the fact that it probably fills a need. There is nothing especially striking about it.

CUNNINGHAM'S TEXT-BOOK OF ANATOMY. Edited by Arthur Robinson, M.D., F.R.C.S., Professor of Anatomy, University of Edinburgh. Sixth edition. Leatherette. Price, $11. Pp. 1554, with 1127 illustrations. New York: William Wood & Company, 1931.

This textbook has gone into the sixth edition since 1902. In the preparation of the latest edition, six new contributors replaced six of those who took part in the preparation of the previous edition. The only American among the six new contributors is Prof. T. Wingate Todd of Western Reserve University, Cleveland, who has revised and partly rewritten the section on the respiratory system. All the sections have been revised or rewritten. The Basle Anatomical Nomenclature has been retained in all the sections, but the B N A classification of joints has been replaced by one more in accord with present-day teaching. Many of the illustrations in the previous editions have been discarded and replaced by more recent ones. The book is well adapted to the needs of medical students.

TRAINING, CONDITIONING AND THE CARE OF INJURIES. By Walter E. Meanwell and Knute K. Rockne. Cloth. Price, $2. Pp. 179, with 8 illustrations. Madison: H. D. Gath, 1931.

The success of these authors in their work at the University of Wisconsin and at Notre Dame should be sufficient guarantee of their knowledge of how to condition athletes and keep them in training. Apparently, the field of athletic training is full of unscientific notions and superstitions which the authors break down in their discussion. Outside of the single statement that bananas digest badly, the book will be found completely reliable in every way. Athletes suffer with blisters, bunions, charley-horse, bruised heels and many other conditions which ordinarily do not concern the average individual. The authors tell how these conditions are to be handled practically. They are blunt in their condemnation of manipulations by manipulative cultists. In general, the book is one of the best brief guides in this field that have ever been made available.

Medicolegal

Roentgen Burn Following Two Years' Treatment

(Berg v. Willett (Iowa), 232 N. W. 821)

Roentgen treatments were administered by the appellee, a physician, for the cure of ringworm on the left hand of the appellant. The first treatment was administered, Jan. 11, 1926. For the first two or three months, according to the patient, treatments were administered twice a week. Thereafter, they were administered at irregular and considerably shorter intervals. The patient claimed that he received in the aggregate sixty treatments. The physician's record and books of account, however, showed entries of only nineteen treatments, some of which were apparently applied to the right hand. In June, 1928, more than two years after the first treatment, the patient observed an unusual condition of his hand. This, he claimed, the physician at that time admitted was due to a burn. In a suit instituted by the patient, the trial court directed a verdict in favor of the physician. The patient thereupon appealed to the Supreme Court of Iowa, where the judgment of the trial court was reversed.

It is and must be the rule, said the Supreme Court, that while the result alone is not in itself evidence of negligence, it may be considered, together with other facts and circumstances disclosed by the evidence, in determining whether or not it is attributable to negligence or want of skill. Whether the rule of res ipsa loquitur has or has not been adopted in Iowa, however, the court regarded it as unnecessary to determine, because the record in this case was barren of any expert or other testimony that could support the application of the rule to the state of facts disclosed. The evidence shows, said the court, that some persons possess idiosyncrasies that make them peculiarly susceptible to roentgen rays. Perhaps, added the court, it is not inaccurate to say that the x-ray machine also apparently possesses idiosyncrasies, which are occasionally manifested by undesirable results even when the greatest care and skill are employed in its use. The expert witnesses agreed that the presence of personal idiosyncrasies can be determined only by the administration of a treatment, in applying which great care must be used. In the present case, the jury might well have found from the evidence that the patient possessed no idiosyncrasy to roentgen rays. The case turned, therefore, on whether there was evidence that would have justified the jury in finding that the injury complained of by the patient was the proximate result of the physician's negligence or unskilfulness.

The evidence was ample to show that a patient may become susceptible to roentgen rays if treatments are administered too frequently or over too long a period of time. Under such circumstances, the condition of which the patient now complains or complained may follow. There was no evidence to show that the x-ray machine was negligently manipulated or that any particular application was in itself harmful. The jury might have found, however, said the court, that the physician was negligent in applying roentgen rays to his patient's hand too frequently and perhaps over too long a period of time, the result being what is known as a cumulative dosage or overdosage. The experts advanced no other theory that would explain the result that followed the treatment in this case, except the possibility that the burn might be attributable to some cause which could not have been known or anticipated in advance by the physician. All of the expert witnesses agreed that much must necessarily be left to the judgment of the physician.

Sufficient facts appeared in the record, the Supreme Court concluded, to have enabled the jury without undue or unnecessary speculation, to find that the physician was guilty of negligence or unskilfulness, resulting proximately in the injury complained of by his patient. The patient was not required to produce evidence so conclusive as to exclude every possible hypothesis except the hypothesis that the physician was negligent or unskilful. The patient made out a prima facie case of negligence or unskilfulness and the issue therefore should have been submitted to the jury.

Privileged Communications: Waiver by Introducing Death Certificate.—An Arkansas statute provides that no person authorized to practice medicine shall be compelled to disclose any information which he has acquired from his patient while attending him in a professional character, which was necessary to enable him to treat the patient. That this privilege may be waived by a proper party in interest is clearly established by the great weight of authority. So, therefore, when an heir introduced a death certificate to prove that the decedent died from chronic alcoholism, a circumstance calculated to affect his mental capacity, it constituted a waiver of the privilege accorded by the statute. Thereafter, said the Supreme Court of Arkansas, there was no reason why the physician who executed the death certificate might not be called to explain and interpret it.—*Shirmer v. Baldwin (Ark.), 32 S. W. (2d) 162.*

Insurance: "Medical Attendance" Defined.—The primary meaning of the words "medical attendance" is the rendering of professional medical services. The words are not necessarily restricted in their meaning to the professional attendance of a physician but may include nursing and watching. Where the insured received instructions from her physician as to what she should do during a specified period to recover from her injuries and followed such instructions, the jury has a right to find that during that period the insured was under the care and regular attention of a physician, even though the insured did not see or communicate with her physician during that period.—*Great Northern Casualty Co. v. McCollough (Ind.), 174 N. E. 103.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, French Lick, Indiana, September 14-19. Dr. William P. Wherry, Medical Arts Building, Omaha, Executive Secretary.

American Academy of Physical Therapy, Montreal, September 3-4. Dr. Thomas L. Smyth, 111 North Eighth Street, Allentown, Pa., Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, White Sulphur Springs, W. Va., September 14-16. Dr. M. A. Tate, 19 West Seventh Street, Cincinnati, Secretary.

American College of Surgeons, New York and Brooklyn, October 12-16. Dr. Franklin H. Martin, 40 East Erie St., Chicago, Director-General.

American Congress of Physical Therapy, Omaha, October 5-8. Dr. F. L. Wahrer, 22 South Center Street, Marshalltown, Iowa, Secretary.

American Public Health Association, Montreal, September 14-17. Dr. Kendall Emerson, 450 Seventh Avenue, New York, Acting Executive Secretary.

American Roentgen Ray Society, Atlantic City, September 22-25. Dr. John T. Murphy, 421 Michigan Street, Toledo, Ohio, Secretary.

Associated Anesthetists of the United States and Canada, New York, October 12-16. Dr. F. H. McMechan, 770 Westlake Road, Avon Lake, Ohio, Secretary.

Colorado State Medical Society, Colorado Springs, September 15-17. Mr. Harvey T. Sethman, Metropolitan Building, Denver, Executive Secretary.

Delaware, Medical Society of, Wilmington, October 13. Dr. W. O. La Motte, Medical Arts Building, Wilmington, Secretary.

Idaho State Medical Association, Boise, September 29-30. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.

Indiana State Medical Association, Indianapolis, September 23-25. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Sec'y.

Interstate Postgraduate Medical Association of North America, Milwaukee, October 19-23. Dr. W. B. Peck, 12½ East Stephenson Street, Freeport, Ill., Managing Director.

Kansas City Southwest Clinical Society, Kansas City, Mo., October 5-10. Dr. Joseph E. Welker, 906 Grand Avenue, Kansas City, Mo., Secretary.

Kentucky State Medical Association, Lexington, September 7-10. Dr. Arthur T. McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Pontiac, September 22-24. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.

Nevada State Medical Association, Ely, September 18-19. Dr. H. J. Brown, 120 North Virginia Street, Reno, Secretary.

Oregon State Medical Society, Eugene, October 22-24. Dr. F. D. Stricker, Oregon Building, Portland, Secretary.

Pacific Association of Railway Surgeons, Yosemite Valley, August 28-29. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco, Secretary.

Pacific Northwest Orthopedic Association, Vancouver, British Columbia, September 5. Dr. Charles McClure, 322 Alder Street, Portland, Ore., Secretary.

Pennsylvania, Medical Society of the State of, Scranton, October 5-8. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

Utah State Medical Association, Salt Lake City, September 9-11. Dr. M. M. Critchlow, Boston Building, Salt Lake City, Secretary.

Vermont State Medical Society, Rutland, October 8-9. Dr. William G. Ricker, 31 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Roanoke, October 6-8. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Wisconsin, State Medical Society of, Madison, September 9-11. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Archives of Otolaryngology, Chicago

13: 785-914 (June) 1931

*Neuro-Otologic Observations in Concussion of Brain. F. H. Linthicum and C. W. Rand, Los Angeles.—p. 785.
New Test for Borrowed Bone Conduction. H. S. Wieder, Philadelphia.—p. 822.
Otosclerosis: Staining and Chemical Reactions. E. W. Hagens, Chicago.—p. 824.
*Delayed Healing Following Simple Operation on Mastoid. W. B. Chamberlin, Cleveland.—p. 829.
*Adenoidectomy Under Local Anesthesia. R. F. Nelson, Oakland, Calif.—p. 834.
Method of Outlining Mucocele by Injection of Iodized Oil. G. E. Tremble, Montreal.—p. 836.
*Anaphylactic Changes in Nasal Mucosa of Guinea-Pigs. W. E. Murphy, Boston.—p. 842.
*Retrobulbar Optic Neuritis Originating in Nasal Sinuses: New Method of Demonstrating Relation Between Sphenoid Sinus and Optic Nerve. H. H. Vail, Cincinnati.—p. 846.

Concussion of Brain.—Linthicum and Rand state that in practically all cases of cerebral concussion the patient complains of some form of equilibratory disturbance. The disturbance of equilibration may be demonstrated by some abnormality in the neuro-otologic observations. These observations are usually indicative of mixed central and end-organ damage rather than involvement of the end-organ alone. The most constant observations are abnormalities in the past pointing reactions. Traumatic equilibratory disturbances arising in the end-organ are more apt to readjust themselves than are those of central origin. Postconcussional vertigo should not be dismissed as psychogenic in origin until it has been checked by neuro-otologic tests. Postconcussional vestibular tests may entirely, or partially, simulate those found in the syndrome of tumor of the cerebellopontile angle.

Simple Mastoidectomy.—Chamberlin believes that in a certain proportion of cases of simple operation on the mastoid in acute mastoiditis, healing, owing to causes apparently beyond knowledge and control, will be slow and protracted. In such cases, when the middle ear remains dry, one should turn to the radical operation on the mastoid only as a last resort, on account of the resulting serious impairment of the hearing. In such cases, severe pain may be an indication of the Gradenigo complication, a localized inflammation at the tip of the petrous portion of the temporal bone with involvement of the gasserian ganglion. This would certainly seem to have been the explanation in one of five cases observed by him, and is a probable explanation in another, although the third symptom in the Gradenigo triad, the diplopia, did not develop. In every case of acute mastoiditis all cells should be thoroughly exenterated and subsequently secondary operations resorted to only when urgent symptoms supervene. The ultimate restoration of hearing is a consideration that should always be kept in view. If there is no discharge from the middle ear and the aditus is kept open, the prognosis for the hearing is good. The method of treatment described, as long as sound surgical principles are followed, apparently has no effect in the causation of delayed healing.

Adenoidectomy.—Nelson describes a technic that gives as complete anesthesia for adenoidectomy as has been obtained in tonsillectomy. The pharynx is anesthetized as for tonsillectomy. With a curved metal applicator, the nasopharynx is swabbed transorally with cocaine in the strength preferred. The inferior turbinate is shrunk and lightly anesthetized, and the choanal vault and laternal nasal wall behind the middle turbinate and below the sphenopalatine ganglion is well anesthetized by topical applications. With good light, the nasopharynx can now be seen through each choana, and the adenoid mass can be seen hanging below its vault. (Incidentally, in children this visibility of the adenoid after nasal shrinkage is often a great aid, especially in examining for recurrent adenoid, when the gag reflex makes posterior rhinoscopy impossible.). With a 22 gage, 4 inch (10.16 cm.), straight Luer needle and a 2 cc. Luer syringe, or 1 or 2 cc. of 1 per cent procaine hydrochloride can now be injected beneath the adenoid on each side, the needle being inserted just behind the upper rim of the choana, and the point advanced about 1.5 cm. as the solution is slowly injected. In five minutes, adenoidectomy can be performed and digital exploration done as thoroughly and as painlessly as under general anesthesia. A postnasal pack or string sponge may be applied for ten minutes if desired. This technic is not feasible with a low deviation of the septum, unless resection of the submucous membrane is first performed, but adenoidectomy can easily accompany the latter operation. Adenoid masses confined to the fossae of Rosenmüller also are often not accessible.

Anaphylactic Changes in Nasal Mucosa.—Murphy records experiments on animals, undertaken to determine what constant changes, if any, occur in the nasal mucous membrane in anaphylactic shock. He found that anaphylaxis in the guinea-pig is manifested by definite and characteristic symptoms. They may be severe and of short duration or mild and drawn out. Death does not necessarily follow an attack. The microscopic observations in the nasal mucous membrane are pronounced. They are as follows: eosinophilia, congestion and, especially, petechial hemorrhages.

Retrobulbar Optic Neuritis.—Vail tabulates a series of fifteen cases of retrobulbar optic neuritis of nasal origin which he studied. An important observation was made by him, namely, that when the onset of blindness was acute and could be definitely dated, it was always noticed after awakening from sleep. The position of the head in sleeping favors the gravitation of infection to the upper outer angle of the sphenoid sinus where the optic nerve is in closest relation. Statistics are quoted to show that the ocular symptoms constitute an early indication of multiple sclerosis in only 14 per cent of the cases, and the opinion is stressed that the virus of multiple sclerosis may gain entrance to the central nervous system from the sphenoid sinus in the same way that organisms have been shown to do. If this is a fact, it would immediately indicate that an early operation on the posterior sinuses should be performed in cases of multiple sclerosis. A new method is described of roentgen visualization of the relations between the optic canal and the sphenoid sinus by means of filling the sinus with radiopaque oil and so placing the patient's head that the upper outer angle of the sinus is dependent. Thus, the radiopaque oil comes into contact with the boundary of the sphenoid sinus where it is most closely related to the optic nerve. In no other position can this be shown.

Canadian Public Health Journal, Toronto

22: 271-324 (June) 1931

Sanitation in National Parks. G. H. Ferguson, Ottawa.—p. 271.
Typhoid Fever Epidemic at Essex. A. E. Berry, Ontario.—p. 275.
Rural Sanitation in Saskatchewan. R. H. Murray, Saskatchewan.—p. 282.
Sanitary Control of Summer Resorts in Quebec. T. J. Lafrenière, Quebec.—p. 285.
Summer Problems in Dermatology. F. C. Harrison, Toronto.—p. 288.
Poison Ivy Control. A. T. Byram, Ontario.—p. 291.
Sanitation in Ontario Summer Resorts. A. E. Berry, Ontario.—p. 293.
Fly Control in Recreational Centers. O. V. Ball, Ontario.—p. 296.
Sanitary Supervision of Roadside Accommodation in Ontario. E. W. Johnston, Ontario.—p. 299.
Sewage Disposal in Summer Residences. A. T. Byram, Ontario.—p. 303.
Food Control for Summer Resorts. A. L. McNabb, Ontario.—p. 306.

Colorado Medicine, Denver

28: 237-278 (June) 1931

Bleeding During Pregnancy. G. Heusinkveld, Denver.—p. 242.
Remote Physical and Mental Changes Following Skull Injuries. L. V. Tepley, Denver.—p. 246.
Etiology and Management of Chronic Diarrhea. H. Gauss, Denver.—p. 250.
Anaerobic Infections and Their Serotherapy. M. Weinberg, Paris, France.—p. 256.

Florida Medical Association Journal, Jacksonville

17: 563-610 (June) 1931

Opportunities and Responsibilities of Railroad Surgeon. S. Leigh, Norfolk, Va.—p. 573.
Beriberi: Case in Diabetic. E. W. Bitzer, Tampa.—p. 577.
Our Medicolegal Status. G. H. Edwards, Orlando.—p. 579.
Cystocele and Rectocele Repair. W. C. Jones, Miami.—p. 582.
Fracture of Greater Cornu of Hyoid Bone—Perforation of Pharynx: Case. S. B. Forbes, Tampa.—p. 585.
Perforated Gastric and Duodenal Ulcers. E. G. Peek, Ocala.—p. 586.
Traumatic Infections. R. O. Lyell, Miami.—p. 587.

Georgia Medical Association Journal, Atlanta

20: 200-252 (June) 1931

Presentation of "Badge of Service" to Retiring President. J. C. Paterson, Cuthbert.—p. 200.
Acceptance of "Badge of Service." G. Y. Moore, Cuthbert.—p. 201.
Angina Pectoris. C. C. Hinton, Macon.—p. 202.
*Anaerobic Wound Infection. T. C. Davison, Atlanta.—p. 207.
Typhoid Carrier. T. H. Johnston, Athens.—p. 213.
Mental Disease Problem in Georgia. R. C. Swint, Milledgeville.—p. 216.
Acute Appendicitis with Especial Reference to Differential Diagnosis. C. W. Roberts, Atlanta.—p. 219.
Pituitary Headache. W. J. Cranston, Augusta.—p. 225.
Obstetrics in the Home. C. K. Sharp, Arlington.—p. 229.
Cancer. J. L. Campbell, Atlanta.—p. 239.
Urinary Tract Pathology in Children. E. Floyd and J. L. Pittman, Atlanta.—p. 240.

Anaerobic Wound Infection.—Davison believes that in all severely lacerated wounds and compound fractures, particularly when there is soil contamination, a prophylactic dose of combined polyvalent anaerobic serum should be given within the first twenty-four hours. In compound fractures combined with severe lacerations and when badly contaminated, one should give a second prophylactic dose of antitetanic serum on the eighth day, bearing in mind the possibility of an anaphylactic reaction. When tetanus develops, the prognosis depends largely on an early diagnosis and the prompt administration of large doses of serum intravenously. Smaller doses may be given intraspinally and intramuscularly. The amount of serum administered varies as to the severity of the individual case; however, one should give all that will be required within the first few days. Gas bacillus infections, formerly considered a clinical curiosity, have become quite common in civil practice, most often occurring as a complication in compound fractures. Gas gangrene has a high mortality unless recognized early and prompt treatment is instituted. In early cases, débridement and polyvalent serum may conserve life and limb, but in late cases high amputation and serum are indicated. Serum does not replace surgery in gas infections but may make radical surgery unnecessary and lowers the mortality rate.

Journal of Comparative Neurology, Philadelphia

52: 225-352 (April 15) 1931

Effect of Alcohol on Nerve Cells of Rats. R. T. Young.—p. 225.
Motor Localization on Cerebral Cortex of Guinea-Pig (Cavia Cobaya). C. Ping, T. H. Chang and L. T. Cheng, Nanking, China.—p. 247.
Study of Growth of Portion of Spinal Cord Following Its Early Isolation from Central Nervous System in Chick Embryo. R. G. Williams, Philadelphia.—p. 255.
Study of Cerebral Function in Learning: Frontal Lobes. C. F. Jacobsen, New Haven, Conn.—p. 271.
Rigidity in Deafferented Limbs. S. W. Ranson, Chicago.—p. 341.
Tracheation of Grasshopper Nerve Ganglions. L. S. Ross and R. R. Tassell.—p. 347.

Journal of Industrial Hygiene, Baltimore

13: 145-184 (May) 1931

*Importance of Points of Contact in Electrical Injuries. O. R. Langworthy and W. B. Kouwenhoven, Baltimore.—p. 145.
*Physical Impairment Among One Thousand Negro Factory Workers. F. P. Allen, Cincinnati.—p. 157.
*Cardiovascular Impairment Among One Thousand Negro Factory Workers. F. P. Allen, Cincinnati.—p. 164.
International Silicosis Conference Held at Johannesburg, August, 1930. C. Badham, New South Wales.—p. 169.

Importance of Points of Contact in Electrical Injuries.—Langworthy and Kouwenhoven describe a series of experiments that they performed to determine the injury produced in the respiratory mechanism by an electric current in cases in which the pathway of the current does not pass directly through the brain. Rats were used as experimental animals since the heart is resistant to injury by electricity. In all the different leads, the current being allowed to pass between the forelegs or the hind legs, or from foreleg to tail or hind leg, it was found that the continuous circuit produced more damage than the alternating circuit. This was not always clear cut in a consideration of the number of animals that recovered from the immediate effect of the shock. It was found, however, that no rats subjected to the continuous circuit would survive permanently. This was largely due to the burning and destruction at the site of the electrodes, which was greater in the case of the continuous circuit. The deaths due to paralysis of respiration were not so frequent when the current did not pass directly through the brain; but, even so, many died from respiratory failure. When the current flowed between the two hind legs, most of the animals breathed spontaneous and showed no evidence of shock. This suggests that respiratory block is less severe when the current does not pass directly through the chest or the upper portion of the spinal cord.

Physical Impairment Among Negro Workers.—Of a group of 1,000 Negro factory workers, examined by Allen, only one was found who was considered to be essentially free of defects. As to the rest, 88 had minor defects only; 911 had significant physical defects; 556 had significant cardiovascular defects, and 996 possessed defects, either minor or significant, that were unknown to them; 977 would, in the estimate of examiners, profit by early medical care.

Cardiovascular Impairment Among Negro Workers.—Allen states that, in a group of 1,000 Negro male factory workers employed in the Cincinnati metropolitan area, 55.6 per cent were found to have significant cardiovascular abnormalities. This rate is notably higher than that of 33.5 per cent found among 2,000 white male workers in this locality. This difference in rates closely approximates the local mortality experience over a period of years. A striking number of men under 40 years of age were found to have significant cardiovascular lesions. Hypertension and myocardial hypertrophy predominated in these observations. Rates for cardiovascular lesions were definitely higher among those overweight and with albuminuria or glycosuria. Men overweight or with positive Wassermann reactions were more prone to hypertension. A high percentage of these Negro workers were unaware of any unsound condition of their circulatory system as well as of other major defects possessed by them. One conclusion is therefore obvious: the evidence cited reveals the need for wider use of the periodic health examination.

Kansas Medical Society Journal, Topeka

32: 181-216 (June) 1931

What of the Future of Organized Medicine? E. C. Duncan, Fredonia.—p. 181.
*Multiple Neurotrophic Joint Disease of Charcot Type with Case Report. F. A. Carmichael, Osawatomie.—p. 186.
Letter from a Kansas Doctor to His Son. J. A. Dillon, Larned.—p. 194.

Neurotrophic Joint Disease.—In a review of the available literature, Carmichael noted that the conception of spinal arthropathies embraces a variety of opinions, many of which are based on an entire misconception of their neural provocation. The bulk of the literature at the present time may be accredited to internists and surgeons and it would seem that little has been written on this subject from the neurologic standpoint. Also it appears that the majority of pathologists have given rather scant attention to the pathology of Charcot joints so far as may be judged by the modern textbooks consulted. Their clinical frequency, the variable pathologic factors presented in their progressive stages, the possibility of limitation of the disabilities they inevitably produce by appropriate early treatment and the frequently misinterpreted symptomatology leading to radical procedures that may hasten rather than arrest the bony destruction, the fact that no satisfactory remedial agencies have been developed up to the present time, notwithstanding reports of improvement or alleged cure under antisyphilitic treatment and the further fact that primarily, arthropathies of this type fall legitimately within the province of the neurologist, suggests a more careful and critical survey of this field and the phenomena it presents. The tenacity with which many writers cling to the conception of the syphilitic factor in these conditions is an indication of the lack of clarity in the average textbook exposition that deals with the fundamental neurologic factor concerned in the production of these pathologic changes.

It is quite probable that, with the advances in roentgenologic technic and application, the point of view may be considerably changed within the next few years. Twenty-five years ago it was believed that Charcot's disease never involved the lumbar segments and that when the spine was involved the cervical region was the site of election. The literature of today indicates that practically 100 per cent of cases showing spinal involvement exhibit changes in the lumbar vertebrae only.

Kentucky Medical Journal, Bowling Green

29: 277-330 (June) 1931

Report of Obstetric Service of Louisville City Hospital for Year July 1, 1929, to July 1, 1930. S. H. Starr, Louisville.—p. 281.
Pregnancy in Heart Disease. L. T. Minish, Frankfort.—p. 289.
Control of Pain in Labor. L. L. Washburn, Benton.—p. 292.
Pellagra in Chronic Alcoholics. W. U. Rutledge, Louisville.—p. 294.
Symposium on Obstetrics and Gynecology: Ectopic Pregnancy. H. A. Davidson, Louisville.—p. 299.
Sterility. D. M. Cox, Louisville.—p. 301.
Some Observations on Cesarean Section. S. H. Starr, Louisville. —p. 302.
Primary Postpartum Cervices in Primipara. W. H. Emrich, Louisville. p. 304.
Traumatized Cervix. C. W. Hibbitt, Louisville.—p. 305.
Traumatized Cervix in Obstetrics. E. Speidel, Louisville.—p. 307.
Appendicitis Record of Lexington, Kentucky, for 1929: Statistical Study. W. O. Bullock, Lexington.—p. 314.
Leaves from History of Medicine. R. C. Falconer, Lexington.—p. 317.
Hay-Fever, Asthma and Other Allergic Diseases. M. B. Cohen, Cleveland.—p. 319.

Maine Medical Journal, Portland

22: 115-134 (June) 1931

Problem of Paranasal Sinuses. F. T. Hill, Waterville.—p. 119.
Spinal Anesthesia in Urology: Report of Two Hundred and Eight Consecutive Operative Cases. C. N. Peters, Portland.—p. 126.
Allergic Insulin Reactions. E. R. Blaidsell, Portland.—p. 129.

Missouri State M. Assn. Journal, St. Louis

28: 257-302 (June) 1931

*New Method of Treating Cancer of Cervix. E. S. Auer, St. Louis.—p. 257.
Emphysema: Its Relation to Blood Pressure and Heart. D. M. Dowell, Chillicothe.—p. 260.
Massive Atelectasis of Lung. R. L. Bower, Kansas City.—p. 263.
Spontaneous Pneumothorax in an Apparently Healthy Woman Following Ordinary Movement. L. Schlenker and F. J. Hellrung, St. Louis. —p. 265.
Russel Extension in Fracture of Femur. E. P. Heller, Kansas City. —p. 266.
Rectal Administration of Liver Extract. S. L. Freeman, Kirksville. —p. 268.
Clinical Observations on Injection of Varicose Veins. O. O. White, St. Louis.—p. 269.
Vitamins and Metallic Salts, and Plant, Animal and Human Nutrition. M. A. Bliss, St. Louis.—p. 272.
Treatment of Anterior Poliomyelitis with Antistreptococcic Poliomyelitis Serum: Seven Cases. G. H. Thiele, Butler.—p. 274.
Prostate as Focus of Infection. T. L. Howden, St. Joseph.—p. 277.
Abnormal Psychology of Sex. J. P. Edmundson, Kansas City.—p. 283.

New Method of Treating Cancer of Cervix.—The technic of the method described by Auer is as follows: The abdomen is opened by a subumbilical midline incision. After the pelvic cavity has been exposed, the extent of the disease and its extension into the various pelvic structures is ascertained by inspection and palpation. The operator now inserts two fingers of his left hand into the vagina beneath the sterile drapings and, with the other hand in the abdomen, he is able to make a thorough examination and detect even the slightest infiltrations and indurations that might have escaped his attention at previous examinations. With the fingers in the vagina as a guide he now places several radon applicators exactly at the points where they are needed, that is to say, around the periphery of the pathologic process and into the enlarged lymph nodes, and he can gage the exact depth at which the applicators are to be deposited. This having been completed, he withdraws from the operation and the abdomen is closed by an assistant. The patient is then placed in the lithotomy position and a capsule of radium is pushed high up into the uterine cavity and radium needles are inserted suitably into the tumor itself. Thus the uterine cancer is exposed to radiation from all sides. In the manner described, eleven patients were treated during the months of June and July, 1930. The experiment was then discontinued for the time being so as to gain an idea as to the efficiency of the method. Since then several of these patients have been observed from time to time and examinations have been made from nine to ten months after the operation. Although it is far too early to speak of any permanent results and although the number of cases is as yet much too small to permit of any definite conclusion, the new method permits one to make a safe, systematic attack on the cancer in a manner that has heretofore been altogether impossible. The results accomplished in ten months bear out this statement, for nine of the women are in a better state of health than are any other nine women treated consecutively with radium alone. Thus far, the method has been applied only in so-called inoperable cases but the author sees no reason why it should not be extended to early cases as well.

New England Journal of Medicine, Boston

204: 1235-1278 (June 11) 1931

One Hundred and Fifty Years: From Tallow-Dip to Television. H. Cushing, Boston.—p. 1235.
Evolution of Modern Surgery. A. Primrose, Toronto.—p. 1245.
Observations on Spinal Anesthesia with Report of 1,875 Cases. B. Rapoport, Boston.—p. 1254.
Blastomycosis: Case. J. G. Downing, Boston.—p. 1259.
Cystic Degeneration of Semilunar Cartilage. E. Pyle, Waterbury, Conn. —p. 1260.

Public Health Reports, Washington, D. C.

46: 1455-1518 (June 19) 1931

Report of Committee on Milk: Conference of State and Provincial Health Authorities of North America. E. G. Brown.—p. 1455.
Epidemiologic Study of Typhoid Fever in Six Ohio River Cities. M. V. Veldee.—p. 1460.

Rhode Island Medical Journal, Providence

14: 85-102 (June) 1931

Electrical Enucleation of Tonsils with Surgical Cutting Current. H. E. Blanchard, Providence.—p. 85.
Summary of Birth Injuries of the New-Born. A. V. Migliaccio, Providence.—p. 89.

Virginia Medical Monthly, Richmond

58: 143-212 (June) 1931

*Significance of Blood Pressure Changes in Hypertension. J. E. Wood, Jr., University.—p. 143.
*Closed Internal Pneumolysis: Aid in Pneumothorax Treatment of Pulmonary Tuberculosis. I. A. Bigger, Richmond.—p. 148.
Use of Roentgen Ray in Diagnosis of Brain Tumors. J. L. Tabb, Richmond.—p. 151.
Care and Prognosis of Extramural Epileptic. D. C. Wilson, University. —p. 158.
Congenital Hypertrophic Stenosis of Pylorus. W. B. McIlwaine, Petersburg.—p. 162.
*Familial Dystrophy of Nails and Hair with Report of Three Cases. K. Nelson, Richmond.—p. 167.
*Unappreciated Source of Epigastric Distress. J. W. Hunter, Jr., Norfolk.—p. 177.
Diseased Tonsils and Adenoids and Indications for Their Removal. J. R. Gorman, Lynchburg.—p. 183.
Giardiasis. P. F. Whitaker, Kinston, N. C.—p. 186.
Pyridium Therapy in Genito-Urinary Diseases. L. M. Mason, Washington, D. C.—p. 190.
Neisserian Abscess of Tyson's Glands. T. V. Williamson, Norfolk. —p. 194.

Significance of Blood Pressure Changes in Hypertension.—Wood records the blood pressure fluctuations taking place in a group of hypertensive patients with and without renal impairment and discusses briefly the factors apparently governing the changes. He states that marked systolic and diastolic blood pressure fluctuations occur in hypertensive patients with normal and subnormal renal function. In a fair percentage of these the cause of the variation may be postulated; often, however, spontaneous variation occurs without explanation. Enlargement of the heart without obvious cause accompanied by a normal or near normal blood pressure should stimulate repeated observation. A careful case analysis and prolonged observation should precede the administration of any drug designed to alter blood pressure in hypertension. If uncontrolled, studies directed toward the artificial reduction of high blood pressure lack conviction.

Closed Internal Pneumolysis.—Bigger is of the opinion that intrapleural adhesions seriously interfere with the results in a large percentage of cases of pulmonary tuberculosis treated by pneumothorax. Division of adhesions therefore is desirable

if a safe method is available. Closed internal pneumolysis is relatively safe when used in well selected cases but is dangerous in cases with fusion of the two layers of pleura, in which injury to lung tissue is likely to occur. Cordlike and bandlike adhesions are easily and safely cauterized and should be severed when they interfere with collapse. Sheetlike adhesions are occasionally suitable for cauterization, but cauterization should not be attempted unless the entire adhesion can be visualized. If collapse is interfered with by short sheetlike adhesions or by fusion of the pleural surfaces, thoracoplasty is indicated.

Familial Dystrophy of Nails and Hair.—According to Nelson, familial dystrophy of the hair and nails, of which he reports three cases, is an hereditary disturbance directly transmitted from parent to child, occurring primarily in persons of French origin. Unaffected individuals seldom if ever transmit the abnormality to their descendants. It is characterized by changes, usually congenital, in the nails of the hands and feet, a peculiar type of hair, and at times various other disturbances, especially in structures derived from the ectoderm. There is a possibility that some internal gland dysfunction, notably of the thyroid, may be associated with this disease. Persons so affected may have involvement of the finger nails alone, finger nails and toe nails, hair alone, finger nails and hair, or finger nails, toe nails and hair. No case has been noted of the involvement of the toe nails alone or of the toe nails and hair. No treatment has proved of any particular benefit. Such nails are liable to sluggist recurrent infections.

Unappreciated Source of Epigastric Distress.—Hunter states that of the many ills of the gastro-intestinal tract, which he has observed on the screen and on the roentgen plate, an acute ascending colitis is by far the most common. It is usually included in a general discussion of the diseases of the colon and passed over lightly. But the discomfort is a real one. An acute inflammation of the ascending colon with its distention by air or gas is a real pathologic entity. It must be differentiated from an inflammation of the remaining colon. Every patient deserves a complete roentgen study to determine whether his complaint is an anatomic, functional or neurotic one. Corrective and supporting measures for the relief of the anatomic causes, inhibition and relief of the gas in the case of the functional causes, and moral suasion in the neurotic cases with an attempt to improve the physical condition of the patient and increase his weight are the treatments to be employed in the relief of the entity, which the author discusses as an unappreciated source of epigastric distress and to which he would give the name of acute ascending colitis.

West Virginia Medical Journal, Charleston

27: 289-336 (July) 1931

*Management of Fractures. J. O. Rankin, Whelling.—p. 289.
Surgical Treatment of Peptic Ulcer. I. Abell, Louisville.—p. 293.
Management of Fractured Pelvis. A. G. Rutherford, Welch.—p. 298.
*Thrombo-Angiitis Obliterans (Buerger's Disease). R. Kessel, Charleston.—p. 301.
Treatment of Pulmonary Tuberculosis. R. M. Wylie, Huntington.—p. 309.
Pylorospasm in Infants. M. F. Petersen, Charleston.—p. 312.

Management of Fractures.—Rankin believes that the treatment of fractures is one of the most interesting branches of surgery—one in which results are constructive. The treatment is made up of a series of events: (1) a reduction that simulates as nearly as possible the normal; (2) a form of retention that is both comfortable and efficient for the patient; (3) the treatment and care of the psychic side of the patient during his long convalescence; (4) the shortening of the period of disability and the return of the patient to his occupation in as short a time as possible. One must strive to have an end-product that is both anatomically and functionally perfect.

Thrombo-Angiitis Obliterans.—Kessel states that in view of the two notable efforts that nature puts forth to take care of the obstruction, namely, the canalization of the vessels and the development of the collateral circulation, which is abundantly able to care for a large redistribution of the circulation, it seems that omitting tobacco and advising prolonged rest and postural exercises, with such sedative measures as will enable the patient to await the reestablishment of the circulation through collateral channels, is the most reasonable method, amputations being reserved as a last resort, no matter what open operative inspection of the femoral artery may reveal. None of the sympathectomy operations need to be considered. As for citrates or Ringer's solution, they may be appealed to as adjuncts to the other methods, but they probably are not specifics for the lesions of thrombo-angiitis obliterans. During the last fifteen years the profession has realized more than ever the importance of establishing the collateral circulation, and if this is successfully done there will be less need in the future for amputations for the relief of the condition.

Wisconsin Medical Journal, Madison

30: 416-513 (June) 1931

Prostate of Middle Age. H. E. Kasten, Beloit.—p. 431.
Focal Infection in Prostate and Seminal Vesicles. W. E. Bannen, La Crosse.—p. 438.
Tuberculosis, Rickets and Diet. G. J. Hildebrand, Sheboygan.—p. 445.
Behavior Problems in Children. M. G. Peterman, Milwaukee.—p. 449.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

12: 123-208 (June) 1931

Agglutinins of Tick-Bite Fever and Sporadic Typhus in Southern Africa in Man and in Guinea-Pigs. A. Pijper and Helen Dau.—p. 123.
Cause of Inactivation of Rous Sarcoma Filtrate During Incubation. Antoinette Pirie and Barbara E. Holmes.—p. 127.
Effect of X and V Growth-Factors on Pathogenicity of Indole-Producing Strains of Influenza Bacilli. A. B. Rosher.—p. 133.
Effect of Sodium Aurothiosulphate in Treatment of Tuberculosis in Guinea-Pigs. C. C. Okell and H. J. Parish.—p. 136.
Blood Glutathione in Disease. R. Platt.—p. 139.
Preparation and Standardization of Colloidal Gold for Lange Test. Jocelyn Patterson.—p. 143.
Effect of Roentgen-Ray Therapy on Partition of Phosphorus Compounds in Blood in Disease. M. Sokolovitch.—p. 147.
Growth of Brucella Abortus (Bovine Type) in Shake Tubes. G. S. Wilson.—p. 152.
Complement-Fixation with Vaccinia Culture-Virus. E. St.G. Gilmore.—p. 165.
Studies on Protein-Free Suspensions of Viruses: I. Adsorption and Elution of Bacteriophage and Fowl-Pox Virus. I. J. Kligler and L. Olitzki.—p. 172.
Id.: II. Cataphoresis Experiments with Protein-Free Suspensions of Bacteriophage and Fowl-Pox Virus. I. J. Kligler, L. Olitzki and M. Aschner.—p. 178.
Quantitative Aspects in Immunity Reactions: Composition of Precipitate in Precipitin Reactions. J. Marrack and F. C. Smith.—p. 182.
Effects of Hemorrhage on Vascular Nervous Mechanism. A. Chauchard, B. Chauchard and D. T. Barry.—p. 190.
Study of Cross-Immunity with Viruses of Fowl-Plague and Observations on Duration of Immunity. H. S. Purchase.—p. 199.
Filtrability of Vaccinia Virus. A. B. Green and G. H. Eagles.—p. 202.

Irish Journal of Medical Science, Dublin

66: 241-288 (June) 1931

Abraham Colles. T. P. C. Kirkpatrick—p. 241.
New View of Function of Corpus Striatum: Its Bearing on Disease of This Region in Man. R. E. Steen.—p. 258.
Case of Double Monster. C. J. Shortall.—p. 278.
Case of Irregular Uterine Bleeding. D. J. Cannon.—p. 279.

Journal of Hygiene, London

31: 291-434 (July) 1931

Birth Rates and Their Possible Association with Prevalence of Infectious Disease. J. H. L. Cumpston.—p. 291.
Spermicidal Powers of Chemical Contraceptives: III. Pessaries. J. R. Baker.—p. 309.
Observations on Bacillus (Hemophilus) Influenzae with Especial Reference to Morphology and Colonial Characters. Muriel M. Smith.—p. 321.
On Statistical Measure of Infectiousness. M. Greenwood.—p. 336.
Observations on Weil-Felix Reaction in Tsutsugamushi Disease. J. W. Wolff.—p. 352.
Epidemic Dysentery in Nursing Staff Due to Bacillus Dysenteriae (Sonne). L. W. Cann and S. de Navasquez.—p. 361.
Keeping Quality of Milk and Age on Testing for Total Bacterial Count. H. Barkworth.—p. 373.
Döderlein's Vaginal Bacillus: Contribution to Study of Lactobacilli. R. Cruickshank.—p. 375.
Specific and Nonspecific Serum Reactions in Typhus Fever. A. Felix.—p. 382.
Mortality of Herd of Mice Under "Normal" Conditions. M. Greenwood, W. C. Topley and J. Wilson.—p. 403.
Review of Cancer Statistics in England and Wales and in Scotland Between 1891 and 1927. W. T. Russell.—p. 406.

Appearance and Persistence in Rabbits' Blood of Rabicidal Antibodies Produced by Various Methods of Antirabies Immunization. G. Stuart and K. S. Krikorian.—p. 414.
Phases of Hemophilus Pertussis. P. H. Leslie and A. D. Gardner. —p. 423.

Journal Obst. & Gynec. of Brit. Empire, Manchester

38: 227-494 (Summer) 1931

Conditions of Life and Reproduction. H. Guggisberg.—p. 227.
Principles of Teaching in Obstetrics and Gynecology with Especial Reference to Methods Employed at University of Copenhagen. S. A. Gammeltoft.—p. 237.
Pathology and Clinical Features of Ovarian Neoplasms. W. B. Bell. —p. 249.
Ovarian Tumors from Pathologic Aspect. T. G. Stevens.—p. 256.
Clinical Aspects of Ovarian Tumors. B. Whitehouse.—p. 264.
Clinical Survey of Consecutive Series of Ovarian Neoplasms. A. M. Fleming.—p. 280.
Consideration of Malignancy in Ovarian Tumors. D. McIntyre.—p. 302.
Survey of 180 Consecutive Cases Treated at Derbyshire Hospital for Women Involving 210 Ovarian Neoplasms. C. D. Lochrane and G. F. Keatinge.—p. 314.
Ovarian Grafting from One Woman to Another, with Report of Successful Case. B. Solomons.—p. 324.
Malignant Disease of Ovary. S. J. Cameron.—p. 329.
Clinical Features of Benign Ovarian Tumors. J. Gardner.—p. 333.
*Influence of Childbearing on Pulmonary Tuberculosis. A. L. Robinson. —p. 338.

Influence of Childbearing on Pulmonary Tuberculosis.—The material of Robinson's paper is based on the answers received to a questionnaire drawn up from the obstetrician's point of view and submitted to a number of recognized specialists in tuberculosis, including medical officers of health, tuberculosis officers, and superintendents of sanatoriums in the United Kingdom, Ireland and elsewhere. Precisely 200 answers were received, of which 40 came from Africa, America, Australia, Canada, China, France and Switzerland. The views of these experts claim serious attention as being representative of the best modern opinion on this subject. The author draws the following conclusions as representing the views of the majority of the experts who answered the questionnaire: 1. Parturition involves a special risk for the tuberculous woman. 2. The patient may show an apparent and occasionally a real improvement during pregnancy, but this is rarely, if ever, maintained after delivery. 3. The injurious effect commonly begins in late pregnancy but increases during the puerperium and reaches its maximum when lactation has been established. 4. No type of tuberculosis is immune to this influence; latent infection may be activated, quiescent lesions reactivated and active disease made more active. 5. The prognosis varies from good to bad, and it must always be approached with caution, but the outlook in cases of latent or arrested disease is not necessarily grave. 6. The present arrangements for the disposal of pregnant tuberculous women are not satisfactory and it is a matter for regret that few sanatoriums provide that continuous supervision which must be maintained throughout pregnancy, labor and the puerperium, if the maternal risk is to be reduced to a minimum. 7. The principles of treatment are: (*a*) sanatorium regimen and discipline without break of continuity from admission during pregnancy to discharge after the dangerous postnatal period has been passed; (*b*) skilled obstetric supervision; (*c*) artificial pneumothorax when required, and (*d*) prolonged postnatal care and the avoidance of conception for a definite length of time; future pregnancies, if any, to be spaced at safe intervals. 8. Therapeutic abortion is indicated only for exceptional cases of early disease and it should never be employed as a routine practice. 9. Lactation must be forbidden in every case and special precautions always taken to guard the child against infection.

Lancet, London

2: 1-56 (July 4) 1931

Toxic Jaundice. W. Willcox.—p. 1.
Malignant Tumor of Thymus Gland. W. Bosanquet and W. E. Lloyd. —p. 6.
Incidence of Osteomalacia and Late Rickets in Northern India. D. C. Wilson.—p. 10.
Acute Aseptic Meningitis. H. Gibbens.—p. 12.

2: 57-110 (July 11) 1931

Toxic Jaundice. W. Willcox.—p. 57.
Effect of Brain Diet in Pernicious Anemia. C. C. Ungley.—p. 63.
Eosinophilia: Three Cases. H. H. Snaguinetti.—p. 67.
Psychosis in Osteitis Deformans. S. J. Hartfall.—p. 68.
Pituitary Cyst: Case with Tonic Fits Resembling Tetany. R. West. —p. 69.

Annales de Médecine, Paris

29: 345-448 (April) 1931

*Activity and Evolution of Pulmonary Tuberculosis. L. Bernard. —p. 345.
Hemiparaplegic Syndrome of Traumatic Origin. G. Guillain and R. Garcin.—p. 361.
*Changes in Blood Urea in Diabetic Coma. M. Labbé and R. Boulin. —p. 386.
Measurement of Blood Pressure in Capillaries: Value of Kylin's Method. A. Sokolowski and M. Kubiczek.—p. 410.
"Paroxysmal Tachycardia." E. Géraudel.—p. 436.

Pulmonary Tuberculosis.—Bernard reports three cases of pulmonary tuberculosis as illustrations of the following conclusions: While it is easy to recognize that a tuberculous lesion is inactive, it is not always easy to determine the significance of any one of the symptoms with regard to the activity or evolution of the lesion. In many instances only prolonged observation enables one to settle this question. The prognosis differs according to various factors. Although it is good when the lesion is passing through a period of activity and is destined to become inactive, it is infinitely more serious when the lesion is in the incipient stage and is going to evolve, because one cannot predict what the evolution will be. Furthermore, the mode of conduct is also entirely different in the two conditions. If there are no contraindications in an evolutive process in which the diagnosis is certain, one should employ artificial pneumothorax. On the other hand it would be a therapeutic error to decide on this intervention for a lesion that is active only temporarily. The author suggests that one should always recognize the manifestations of tuberculous activity and evolution, distinguish theoretically between these two conditions in order to differentiate them in practice, and not be afraid to delay the treatment in a doubtful case in order to establish the diagnosis, prognosis and treatment.

Changes in Blood Urea in Diabetic Coma.—Labbé and Boulin studied the changes in the urea content of the blood in patients with diabetic coma. Their conclusions are that in a certain number of cases, approximately half, diabetic coma is accompanied by a moderate azotemia, the amount of urea being usually about 0.1 Gm. per hundred cubic centimeters. Azotemia is associated with a decrease in the excretion of urea, with albuminuria and with cylindruria. Its presence does not change the other classic characteristics of diabetic coma, notably the alkali reserve, the glycemia and the glycosuria. The amount of chlorides in the urine is markedly decreased; the amount in the blood varies but is frequently slightly diminished, but the phenomenon is not a specific one for this type of coma. The amount of acetone bodies in the urine is small; however, in none of the patients whom the authors were able to keep under observation were they completely absent. The clinical signs are not noteworthy. It seems to the authors that azotemia is related to the degenerative lesions in the convoluted tubules, through which, it is believed but not conclusively demonstrated, the acetone bodies pass. Azotemia appears in the first hours of coma; hence its great prognostic value. Diabetic comas complicated by retention of urea terminate by death twice as frequently as those without azotemia. The absence of diminution in the azotemia on the second day of the coma is a highly ominous sign. Death occurs, depending on the case, from irreducible acidoketosis, from heart failure or from obscure conditions that have been designated as uremia but which, in the authors' opinion, are still of undetermined nature.

Paris Médical

1: 517-548 (June 6) 1931

Communicable Diseases During 1931. C. Dopter.—p. 517.
Lepra Bacillus. E. Marchoux.—p. 529.
Communicable Diseases in Obstetric Period. H. Vignes.—p. 532.
*Chemotherapy of Anthrax. A. Urbain.—p. 537.
Tularemia. E. Sacquépée and J. Fricker.—p. 539.
Epidemic of Acute Anterior Poliomyelitis in Army During Summer of 1930. C. Dopter.—p. 543.

Chemotherapy of Anthrax.—Urbain reviews the literature on the subject and describes his experiments on guinea-pigs and rabbits. His conclusions are as follows: Antianthracic serum is the treatment of choice in anthrax. However, if it is not procurable one may employ neoarsphenamine, which, if given from the beginning in large doses, may rapidly arrest

the infection. One may also consider combined treatment with neoarsphenamine and antianthracic serum, the former preparing the way for the action of the latter.

Revue de Chirurgie, Paris

50: 199-298 (April) 1931

*Arthropathies of Hemophilic Persons. P. E. Weil and R. Massart. p. 199.
*Primary Tumors of Joints. P. Razemon and G. Bizard.—p. 229.
Fracture of Carpal Scaphoid: Sequelae. G. Bonnet and J. Sarroste. —p. 267.

Arthropathies of Hemophilic Persons.—Weil and Massart report their studies on arthropathy, one of the most frequent complications of hemophilia. According to the stage of evolution at which hemophilic persons come under observation, one notes the following changes in the joints: (1) hemarthroses, (2) arthritis with thickening of the synovial membrane and (3) arthritis with a deformed joint. The intra-articular hemorrhagic effusion is the first articular manifestation of hemophilia. Regardless of the amount of effusion one should never attempt to evacuate it. When arthritis with thickening of the synovial membrane is present, one should always immobilize the joint. The treatment of arthritis with a deformed joint is more complicated and is described in detail. The authors conclude as follows: A hemophilic arthropathy taken in time and correctly treated should heal with complete mobility of the joint.

Primary Tumors of Joints.—Razemon and Bizard report their observations in seventy-four cases of primary tumors of the joints, of which forty-five were benign and twenty-nine malignant. The common location of these tumors is the knee joint. In the group of benign tumors were included lipomas, fibromas, angiomas (distinctly intra-articular), benign neoplasms with giant cells, ocher pigment and xanthic cells. Among the malignant tumors the most frequent were spindle cell and round cell sarcomas, myxosarcomas and synovial endotheliomas. The authors state that the three common clinical forms are: (1) movable tumor of the type of a foreign body in the joint, (2) immovable circumscribed tumor, and (3) diffuse tumor that simulates white swelling. The diagnosis of these tumors is difficult. Only the angiomas produce a few characteristic symptoms. The points of differentiation between these tumors and arthritic conditions are the absence in the latter of a marked incapacity, of bone lesions and of adenopathies. The diagnosis of a malignant condition is often impossible without a microscopic examination, even after the joint has been opened. A circumscribed tumor may be malignant, whereas a diffuse tumor that involves the whole synovial membrane, on the contrary, may be benign. The indications for surgical intervention are difficult to formulate. As a rule one should treat the tumor as if it were benign and amputate only secondarily. Moreover, in malignant tumors, limited resection does not appear to give worse results than primary amputation.

Clinica Chirurgica, Milan

34: 357-476 (April) 1931

Anesthesia in Modern Surgery. B. Rossi.—p. 357.
*Influence of Roentgen Irradiation Applied to Vertebral Bodies (Sixth, Seventh and Eighth Thoracic) on Sensibility and on Gastric Secretion. C. Chianello.—p. 371.
Oculocardiac Reflex and Behavior of Patients Subjected to Surgical Interventions. G. Giordanengo.—p. 386.
Pseudobotryomycosis: Case. G. Moro.—p. 401.
So-Called Articular Chondromatosis. G. Castiglioni.—p. 405.

Influence of Roentgen Irradiation Applied to Vertebral Bodies on Gastric Secretion.—Chianello reports that in the majority of the patients studied he observed a notable increase of free hydrochloric acid whereas the values of the pepsin potency remained unchanged. The increase in the total acidity did not correspond to the increase in free hydrochloric acid; on the contrary, in two cases, while the value of the free hydrochloric acid increased, the values of the total acidity remained unchanged. In all the patients the epigastric pains and the subjective sensation of acidity disappeared on the first or the second irradiation. It did not appear from the results obtained to be at all important whether the patients were of the vagotonic type or the sympathicotonic type, or whether they belonged to still other types.

Policlinico, Rome

38: 727-762 (May 25) 1931. Practical Section

*Antidiphtheritic Vaccination with Ramon's Toxoid. M. Faberi and G. Golluscio.—p. 727.
Biliary Peritonitis with Apparent Integrity of Biliary Tracts. L. Tiberio.—p. 731.
Modern Treatment in Addison's Disease. V. Serra.—p. 733.

Antidiphtheritic Vaccination with Ramon's Toxoid.—Faberi and Golluscio report their results from the use of Ramon's toxoid for antidiphtheritic vaccination. In one group of children the subcutaneous route was employed and in the other group the toxoid was introduced by the nasal route. In the latter group, the percentage of immunizations was only slightly lower than in the former. The children accepted more readily the vaccination by the nasal route.

Riforma Medica, Naples

47: 709-748 (May 11) 1931

Renal Diabetes. M. Bufano.—p. 711.
*Blood Sugar Following Gastric Resection. R. Lombardi.—p. 715.
Jackson's Membrane. F. Graziani.—p. 717.

Blood Sugar Following Gastric Resection.—The purpose of Lombardi's research was to discover whether, after partial resection of the stomach, there were changes in the blood sugar index. He experimented on dogs, in which he determined the sugar index mornings fasting at least twice before the intervention. He performed then partial resection of the stomach, followed by posterior gastro-enterostomy. Twenty hours after the operation he took samples of blood and then every morning fasting. The animals were given no food or water for the first twenty-four hours; then they were given a little water. On the fourth or fifth day they were given milk or "paste," and then a normal diet was gradually resumed. In the six dogs that survived beyond the first days, the author noted, after the first twenty hours from the intervention, a notable lowering of the blood sugar index. The index remained, barring slight fluctuations, at the same level until the animals began to get food (milk and paste). Then a hyperglycemia was observed (the test was always made in the morning fasting and not after the ingestion of food) which exceeded the sugar index before the operation. It remained at the same level with slight changes for from three to five days and then a new lowering of the blood sugar occurred down to values equal to those recorded twenty hours after the intervention. The blood sugar returned to normal usually in from five to ten days.

Medicina, Mexico City

11: 589-614 (June 10) 1931. Partial Index

*Epidemiology of Typhus. M. Ruiz Castañeda.—p. 589.

Epidemiology of Typhus Fever.—In order to ascertain the rôle that rats play in the transmission of typhus fever to man, Ruiz Castañeda performed some experiments during the last epidemic in Mexico City. Some rats were caught in a prison of that city. With the brains of the animals an emulsion was prepared and several guinea-pigs were inoculated with it. Two of the guinea-pigs developed an attack of typical typhus fever nine and thirteen days, respectively, after the inoculation. Both the infected rats and the infected guinea-pigs showed the typical scrotal reaction previously described as a characteristic of typhus fever. Examination revealed that the tunica vaginalis was inflamed and hemorrhagic and contained a fibrinous exudate from which the intracellular organism known as *Rickettsia prowazeki* was isolated. The virus proved to be virulent during six passages in rats and guinea-pigs. Rabbits in which the Weil-Felix reaction had been negative gave a positive reaction nine days after the inoculation of an emulsion made from the tunica vaginalis of an infected guinea-pig. There exists a cross immunity between the strains from those rats and the strains isolated from typhus fever, as was proved by the fact that animals convalescent from the infection caused by strains from typhus patients were immune to a further inoculation with rat strains and animals convalescent from the infection caused by rat strains were immune to a further inoculation with strains from typhus patients. The author states that the strains isolated from rats are identical

with those previously described in typhus fever of man, both strains immunologically corresponding to the strains of European typhus.

Beiträge zur klinischen Chirurgie, Berlin

152: 161-324 (April 29) 1931

*Etiology of "Inflammatory" Strictures of Rectum: Lymphogranulomatosis as Primary Disease. C. Barthels and H. Biberstein.—p. 161.
Histologic Structure of Benign Tumors of Knee Joint. F. Eichbaum.—p. 184.
Statistics on Etiology of Carcinoma of Mamma. E. Prass.—p. 210.
Statistics on Gallstone Disease. P. Blümel.—p. 221.
Experiences and Results with My Distraction Apparatus in Fractures of Leg. W. Block.—p. 235.
Application of Brilliant Green and of Malachite Green in Combat of Surgical Infection. A. S. Kosdoba and T. M. Kupermann.—p. 250.
Treatment of Fractures of Humerus by Means of Vertical Extension. E. Baumann.—p. 260.
*Surgical Tuberculosis and Its Treatment by Means of Mesothorium. K. Volkmann.—p. 264.
Swallowing of Foreign Bodies and Other Types of Self Injury. H. Schum.—p. 276.
Autotransplantation of Kidney. S. Frey.—p. 299.
*Bacteriologic Examination of Surgically Removed Gallbladders. W. Haase.—p. 305.
Bone Suture in Treatment of Fractures of Jaw. K. Greve.—p. 310.

Etiology of "Inflammatory" Strictures of Rectum.—In the first part of the article, Barthels and Biberstein review the various theories of the etiology of inflammatory rectal strictures. Besides syphilis, gonorrhea and tuberculosis, which are most commonly cited as the causes of inflammatory rectal strictures, they also mention dysentery, actinomycosis, leprosy, bilharziasis, and other parasitic diseases occurring in the tropics and particularly chancroid; also acute catarrhs, chronic ulcerative colitis, decubital ulcer in fecal impaction, traumatic lesions, toxic and chemical injuries, vasoparalytic influences, ruptured hemorrhoids and also simple ulcer. Especially noteworthy seems the fact that the disease is most frequent in women, and the fact that particularly prostitutes are affected is perhaps accountable for the assumption that syphilis and gonorrhea are generally the cause of this disease. In discussing the clinical course of the disease the authors state that the initial manifestations are not fulminant and there is at first usually a discharge of blood and mucus. Later there are pains and symptoms of stenosis, which usually prove to be extremely chronic and persistent. Treatment has to be continued for several years and in most instances major interventions are necessary, and in some cases the disease is fatal. The serious character of the disease makes it appear desirable to determine its etiology. However, in most cases in which careful searches were made for a syphilitic, gonorrheal, tuberculous or other cause, definite conclusions were not reached. The authors give the clinical histories of five patients, all women, three of whom they have observed in the course of the last year and two of whom had been treated for stricture of the rectum twenty and six years previously. It is emphasized as especially noteworthy that in two of the women the inguinal lymph nodes showed marked inflammatory changes and in the third patient the inguinal lymph nodes were enlarged. Assuming that perhaps lymphogranulomatosis inguinalis might be the etiologic factor, Frei's test was made and positive reactions were obtained in all five cases. The authors further studied the case histories of the other cases of stricture of the rectum, which they had observed in the last twenty years but which had not yet been examined for lymphogranulomatosis inguinale. Because the symptoms of most of these cases were like those in the patients with the positive Frei reaction, the authors conclude that lymprogranulomatosis is of the greatest significance in the etiology of "inflammatory" strictures of the rectum, and that the former assumption of the etiologic importance of syphilis and gonorrhea needs to be revised. The greater frequency of these strictures of the rectum in women than in men is traced to the anatomic conditions of the rectovaginal region and particularly to the different structure of the regional lymph channels in women.

Surgical Tuberculosis and Its Treatment by Means of Mesothorium.—Volkmann states that on the basis of several years' experience in several hundred patients with surgical tuberculosis, who were subjected to irradiation with mesothorium, it can be asserted that mesothorium has a significance in the treatment of surgical tuberculosis, which exceeds the usual results of nonspecific stimulation irradition. The mesothorium treatments are given in small doses at intervals of several weeks. The effect of the irradiation becomes manifest in an immediately developing hyperemia. To what factor the favorable results may be ascribed cannot be determined with certainty. In combination with other therapeutic measures and with conservative surgical interventions, the mesothorium therapy of surgical tuberculosis shortens the duration of the disease process and leads to good functional and cosmetic results. Injuries do not develop even after frequently repeated irradiations. It is probable that the gamma rays of the mesothorium are superior to roentgen rays. The author thinks that the good effects and favorable late results justify further investigation of this method.

Bacteriologic Examination of Surgically Removed Gallbladders.—Haase states that seventy-five gallbladders that were removed at the surgical clinic of the University of Jena were subjected to microscopic and bacteriologic examination. Thirty-six per cent of the gallbladders were found to be free from bacteria. In 32 per cent colon bacilli were found, and in 24 per cent various cocci could be demonstrated. The cocci were mostly enterococci. From this the author concludes that bacterial inflammation of the gallbladder is more often of intestinal than of hematogenic origin, at least so far as such conclusions may be drawn from the type of the bacteria detected.

Monatsschrift für Kinderheilkunde, Berlin

50: 1-88 (May 13) 1931

*Animal Experiments on Celiac Disease. R. Freise and E. Walenta.—p. 1.
*Relation Between Zoster and Chickenpox. H. Mommsen.—p. 11.
Absorption of Food by Nurslings. A. Peiper.—p. 20.
Partial Gigantism: Case. I. Hilmi.—p. 29.
Unilateral Hemangioma of Brain and Skin: Case. W. Schaefer.—p. 35.
Spontaneous Fracture in Child with Lymphatic Leukemia. M. Trusen.—p. 45.

Animal Experiments on Celiac Disease.—Freise and Walenta first review the literature on celiac disease, and after describing the symptomatology they evaluate the various theories on the pathogenesis. Further they review clinical studies conducted by Freise several years previously, which had led him to believe that celiac disease is caused by a disturbance in the autonomic nervous system; either the tonus of the splanchnic nerve is reduced, or the tonus of the vagus nerve is increased. In order to gain a better insight into this problem the authors resorted to animal experiments. The experiments were done first on dogs and later on young pigs. By dividing the celiac plexus in these animals it was possible to produce a syndrome that was identical with the symptomatology of celiac disease in children, namely: (1) chronic diarrhea with bulky, fatty stools, (2) increased motility of the small intestine and of the ascending colon, (3) development of a large meteoristic abdomen, (4) cessation of weight increase and inhibition of growth. The authors do not wish to create the impression that the condition produced in the pig by the division of the celiac plexus is entirely identical with celiac disease in children. However, they think that their experiments have thrown light on the pathogenesis of celiac disease and that they have found additional proof for their theory that celiac disease is caused by an innervation disturbance in the sphere of the splanchnic nerve.

Relation Between Zoster and Chickenpox.—Mommsen reports that in a whooping cough ward, in which for months there had not been a case of chickenpox, a child who had been in this ward for six weeks developed zoster. The child's anamnesis did not reveal any previous attack of chickenpox. Thirteen days later the sister of this child, who likewise never had had chickenpox, also developed a zoster. During the following days nine children in the ward developed chickenpox, and after the usual incubation period two other cases of chickenpox followed. In the fourth group of cases, a patient was observed in whom the chickenpox lesions not only had a zoster-like distribution but in whom there also existed a typical zoster. This case was followed by a fifth group of chickenpox cases. On the basis of these observations the author assumes that the chickenpox virus is changeable. He thinks it probable that there are clinically healthy carriers of a modified chickenpox virus that can be activated by unknown or known (arsenic) factors and may cause a zoster.

Münchener medizinische Wochenschrift, Munich

78: 945-984 (June 5) 1931

*Experiences with Fever Therapy in Chronic Gonorrhea. R. Foerster. —p. 945.
*Malariotherapy as Cause of Congenital Malaria. H. Schadow.—p. 947.
Anaphylactic Shock Following Intravenous Injection of Chiniofon-Casein. G. Herholz.—p. 949.
Surprising Tubercle Bacillus Observations in Young Children. Opitz. —p. 949.
Diagnostic Mistakes in Urologic Practice. M. Klika.—p. 951.

Experiences with Fever Therapy in Chronic Gonorrhea.—On the basis of his experiences, Foerster reaches the following conclusions: In all cases of gonorrhea that are refractory to the usual therapeutic measures, fever therapy should be instituted. Of the various fever treatments the maximal vaccine therapy and the treatment with a suspension of nonpathogenic micro-organisms should be tried first. If these fail, malariotherapy may be tried, provided all contraindications have been considered and the heart action is carefully controlled. The number of fever attacks should not be less than ten, no matter what form of fever therapy is employed. The local treatment should be continued during the course of the fever, for this alone will effect the killing and removal of the gonococci that have been eliminated by the fever process. The fever treatment should be followed by an after-treatment of at least two or three weeks' duration. The preparatory and after treatments may be ambulatory. However, the fever treatment should be given in a suitable institution.

Malariotherapy as Cause of Congenital Malaria.—Schadow reports the clinical history of an infant who was brought to the clinic because a congenital syphilis was suspected. The mother had dementia paralytica and the Wassermann reaction of the blood from the umbilical cord was strongly positive. Oral antisyphilitic treatment was begun. During the third week of life there suddenly developed fever between 39 and 40 C. (102.2 and 104 F.) and the spleen was enlarged. At first the cause of the fever could not be determined. Soon a certain regularity of the fever was noted. An examination of the blood revealed an abnormal blood picture and in the erythrocytes malaria plasmodia of the tertian type were discovered. Subsequent blood tests eliminated all doubt that the infant had malaria. Inquiries revealed that on account of severe dementia paralytica the mother had undergone malariotherapy during her pregnancy. Thus it was evident that this was a case of congenital malaria resulting from malariotherapy of the mother during gestation. With the aid of quinine treatments and blood transfusion the infant was finally cured, so that at the end of the seventh month he could be discharged from the hospital. Syphilitic symptoms were never noted in the child and an after-examination at the end of the first year gave no evidence of congenital syphilis.

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Disorders of Optic Chiasm. B. Brouwer.—p. 2683.
*Disturbance in Hemodynamic Equilibrium as Cause of Eclampsia. J. C. Beker.—p. 2698.
Clinical Manifestations in Cerebral Paralysis in Children. C. Schaap. —p. 2709.
Treatment of Traumatic Cataract. F. Wibaut and L. K. Wolff.—p. 2716.

Disturbance in Hemodynamic Equilibrium as Cause of Eclampsia.—Beker recalls that, with the advent of pregnancy, a change in the distribution of the circulating blood becomes necessary. Not only does a change in the blood flow have an influence on the vascular area chiefly concerned but through hemodynamic interaction of collateral areas these may help to regulate the blood flow. If there arises in a certain organ an extra demand for blood, the demand may be met by dilatation of the afferent vessels. The additional quantity of blood can be supplied either by the reserve blood found in the spleen, liver and capillary areas or by blood that is derived from other organic areas through vasoconstriction of the arteries of these areas. The heart does not need to be overburdened, since in the organ that requires the additional blood there is ordinarily no increased resistance to be overcome. The reflex that goes out from an organ to regulate the blood flow needed for its nutrition may be referred to as the nutrition reflex. Under increased functioning of an organ, this reflex is strengthened. With the advent of pregnancy, a strong nutrition reflex is produced by the impregnated ovum. Not only the ovum but also the expanding uterus and the surrounding tissues require an ample blood supply. In a normal pregnancy the blood flow should satisfy the nutrition reflex and overcome the normal resistance in the area of the pregnant uterus. In case of increased resistance, the factors are present that may lead to an abnormal reaction, an abnormal vasoconstriction in various vascular areas with thereby induced injurious results. It is probable also that a change in the blood flow of various organs may exert great influence on the metabolism processes. The author thinks that the clinical symptoms edema, kidney disease, eye and brain manifestations and high blood pressure may be explained by vasoconstriction. The possible causes of an abnormal reaction are: (1) an abnormal and obstructed blood flow through the uterine area with a normal reaction of the remaining areas of the circulation, or (2) a normal blood flow through the uterine area, and an inadequate reaction of the remaining circulatory areas. Cause 1 may be expected more in primiparas. Adaptation of the uterus and the blood vessels is more difficult in primiparas than in multiparas. The author's observations show that the uterus of eclamptic patients is usually small and weighs less than in normal parturients. It is thus probable that in eclamptic patients more resistance has to be overcome than otherwise. Another cause may be an abnormally rapid growth of the fetus, whereby the tension of the muscles is increased. This is said to be the case in twin pregnancies, hydramnion, and frequently in premature separation of the placenta. Under cause 2 come the cases in which, in addition to pregnancy, there are further abnormal demands on the circulation, so that an otherwise normal pregnancy reflex causes trouble.

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*Chronic Leukemia: Roentgen Treatment. B. Nyström.—p. 247.

Roentgen Treatment of Chronic Leukemia.—In Nyström's fifty-four cases of myeloid leukemia, mostly in persons between the ages of 30 and 50, the proportion of men to women was as 8 is to 6.4, and in the thirty-three cases of lymphatic leukemia, mostly in persons between the ages of 50 and 70, the proportion was as 2 is to 1.3. He states that heredity apparently is not a factor in the origin of chronic leukemia, the condition is not infectious, and constitutional anomalies cannot be demonstrated clinically. The roentgen therapy was individualized and the blood count was taken at least once a week during irradiation and once a month during the intervals. In myeloid leukemia the usual method was followed of irradiating the spleen and bone marrow. In the lymphatic cases large fields were irradiated with small doses (one chest field, one abdomen field, and two back fields with 1/30 unit skin dose, 160 kilovolts, 4 milliamperes, focal distance of 40 cm., filter of 0.5 mm. of copper and 0.5 mm. of aluminum, from three to five times a week during the irradiation series). The average length of life after the appearance of the myeloid leukemia was two years and ten months; of the lymphatic leukemia, one year and nine months. One patient with myeloid leukemia is still living twelve and one-half years after the onset of the first symptom and nine years after roentgen therapy was begun. The author's cases show that the length of life after the start of roentgen therapy does not necessarily depend on the length of time between the onset of the first symptom and the first irradiation, except in advanced, neglected cases. To what extent roentgen treatment prolongs life cannot be answered on the basis of his material, but the prognosis seems to depend mainly on the more or less benign nature of the disease. A few days after treatment is begun the total number of white blood corpuscles, including lymphocytes, decreases, the hemoglobin content increases, the enlargement of the spleen, liver and lymph nodes is reduced, and the general condition improves. The patients feel well for long periods and are usually able to work till shortly before death. Gradually the reaction to the treatment becomes less marked and finally the patients become refractory to it.